

Printout No 2

LOAD RUNNER

THE GALAXY'S FIRST COMPUTER COMIC

WHILST ON A ROUTINE JOB FOR LONDON REPAIRMEN, MICRO MECHANIC MIKE ROMAN IS AMBUSHED BY A ROGUE ROBOT INSIDE A MYSTERIOUS WAREHOUSE. AS HE LOSES CONSCIOUSNESS, HE RECOGNIZES THE WAREHOUSE AS THE INSIDE OF AN ENORMOUS COMPUTER...

PULSE,
RESPIRATION
AND BRAIN
ACTIVITY NORMAL.
ALL BODY
FUNCTIONS ARE NOW
OPERATIONAL.

MIKE ROMAN
DATA ERASED
COMPLETELY. MEMORY
READY TO RECEIVE
NEW DATA.

INPUT
NEW DATA.
**LOAD
PROGRAM.**

LOADING
COMPLETED.
PROGRAM NOW
RUNNING. BRAIN
ACTIVITY
INCREASING.

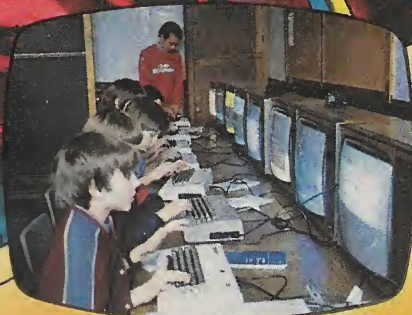
CONSCIOUSNESS
RETURNS...

LOAD?
... RUN?
WHERE AM
I? ... WHO
AM I?

WIN A COMPUTER
CAMP HOLIDAY

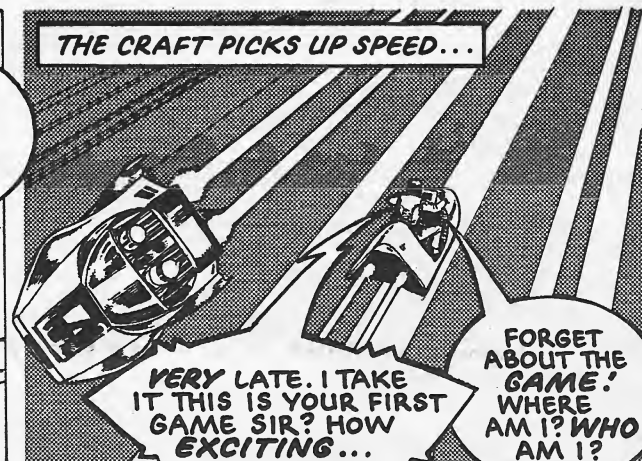
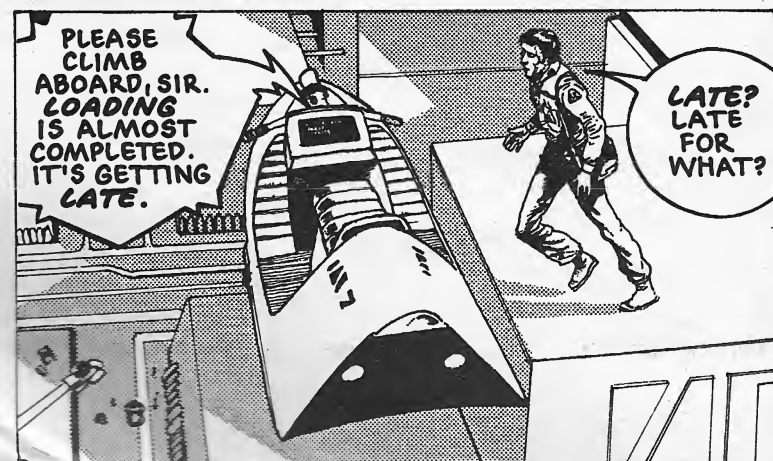
ANDY'S SECRET
IS REVEALED

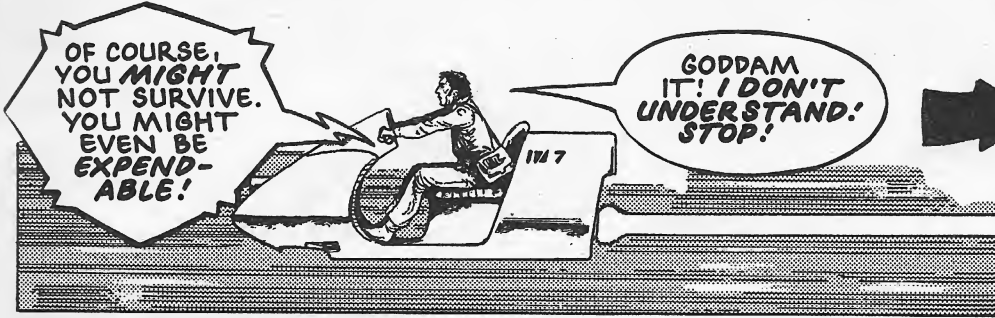
BLAKE'S SEVEN
AND ORAC





SCRIPT:
BILL SCOLDING
ARTWORK:
PETER DENNIS
LETTERS:
STEVE POTTER



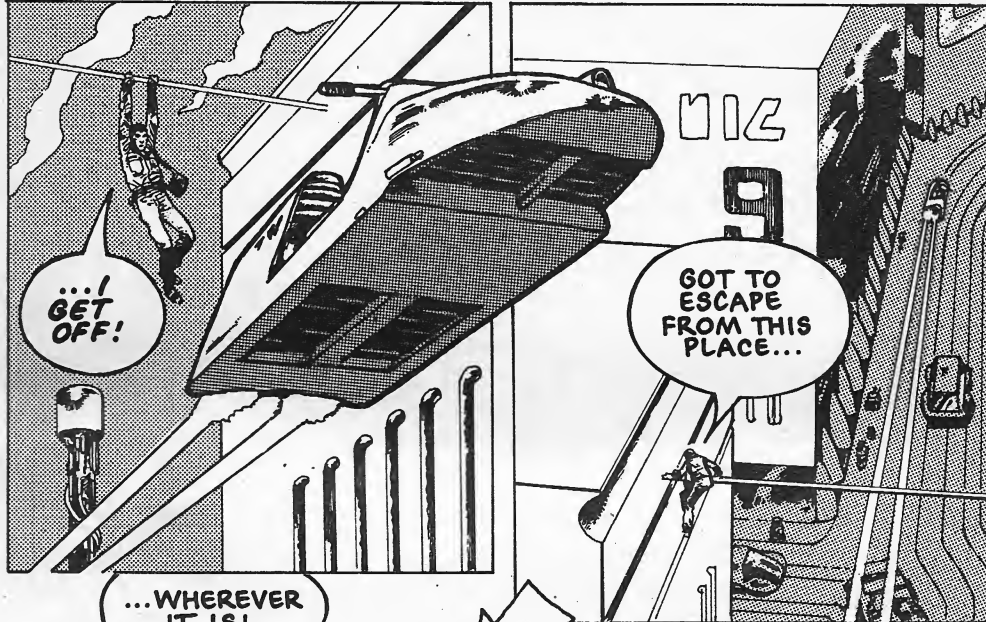


OF COURSE, YOU *MIGHT* NOT SURVIVE. YOU *MIGHT* EVEN BE *EXPENDABLE*!

GODDAM IT! I *DON'T* UNDERSTAND! *STOP!*

AS THE CRAFT SLOWS DOWN TO CORNER...

WELL, YOU'LL CERTAINLY KNOW SOON ENOUGH. NO POINT IN WORRYING NOW. THE PROGRAM HAS *LOADED*, AND IS READY TO *RUN*...



...I *GET OFF!*

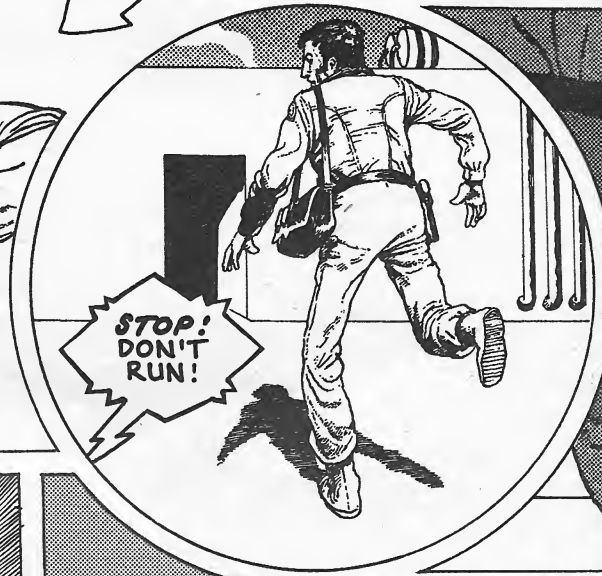
GOT TO ESCAPE FROM THIS PLACE...



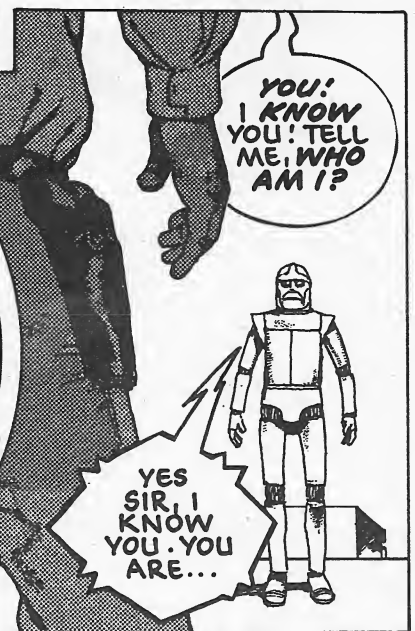
AND *SO AM I!* THIS IS WHERE...



...WHEREVER IT IS!

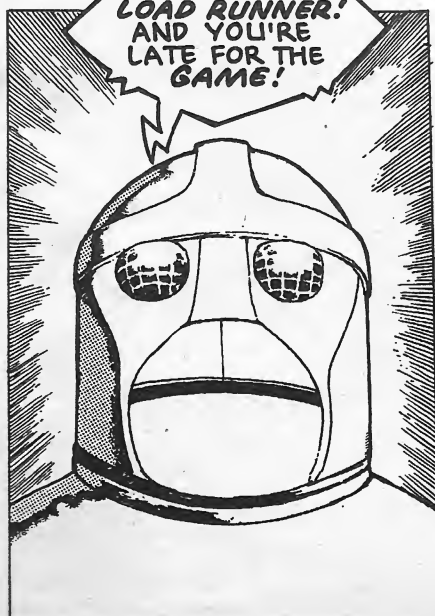


STOP! DON'T RUN!

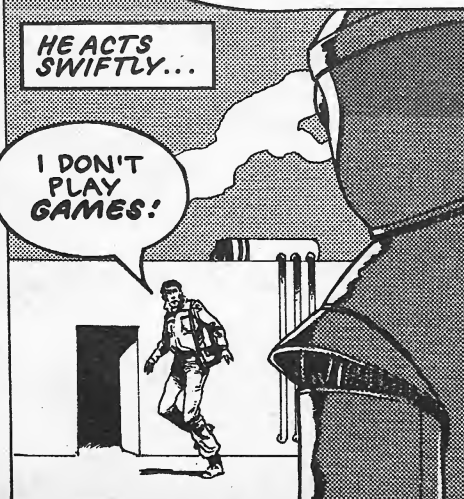


YOU! I *KNOW* YOU! TELL ME, WHO AM I?

YES SIR, I *KNOW* YOU. YOU ARE...

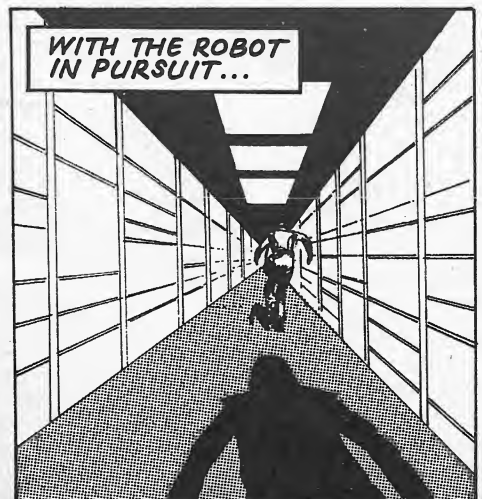


... THE *LOAD RUNNER!* AND YOU'RE LATE FOR THE *GAME!*



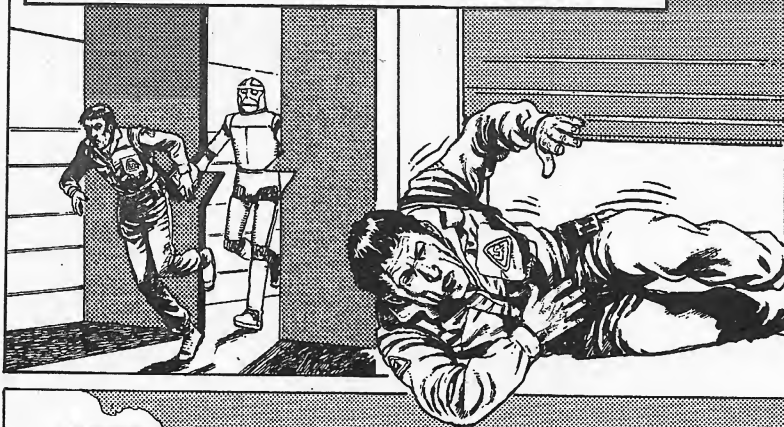
HE ACTS *SWIFTLY*...

I *DON'T* PLAY *GAMES!*



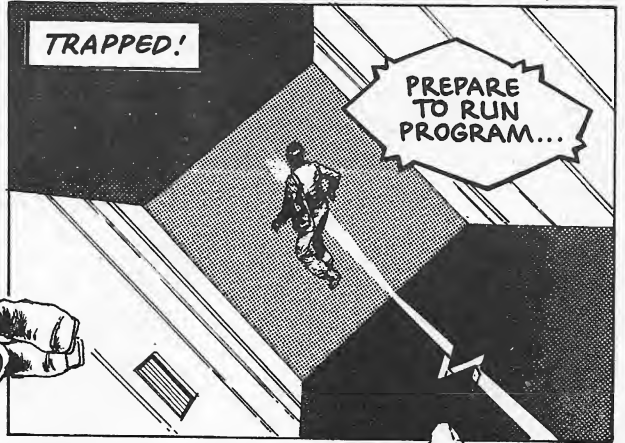
WITH THE ROBOT IN PURSUIT...

DOORS CLOSE TO SHUT OFF ANY RETREAT...



TRAPPED!

PREPARE
TO RUN
PROGRAM...



BUT NO SOONER HAS ONE
DOOR CLOSED THAN
ANOTHER DOOR OPENS...

THE GAME IS
RUNNING...



...ONTO AN ALIEN
LANDSCAPE.



THE MIST CLEARS...

I DON'T
BELIEVE
IT!



AND REALIZATION DAWNS!

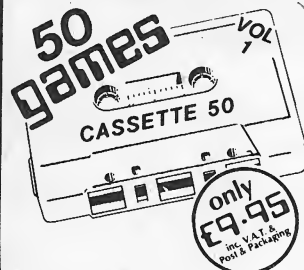
IT IS
A GAME...
BUT ON A
GIGANTIC
SCALE!

NEXT ISSUE:
PLAY BEGINS.



DON'T MISS THIS INCREDIBLE OFFER! 50 GAMES £9.95!

CASSETTE 50 FOR YOUR MICRO



GALACTIC ATTACK
SPACE MISSION
LUNAR LANDER
PLASMA BOLT
STARTREK
RADAR LANDING
ATTACKER
GALACTIC DOGFIGHT
ZION ATTACK
IVASIVE ACTION
OXO
BOGGLES
PONTON
SKI JUMP
HANGMAN
OLD BONES
THIN ICE

MAZE EATER
ORBITTER
MOTORWAY
FORCE FIELD
NIM
TUNNEL ESCAPE
BARREL JUMP
CANNONBALL BATTLE
OVERTAKE
SITTING TARGET
SMASH THE WINDOWS
SPACE SHIP
JET FLIGHT
PHASER
INTRUDER
INFERNO
GHOSTS

SUBMARINES
ROCKET LAUNCH
PLANETS
BLACK HOLE
DYNAMITE
DO YOUR SUMS
DERBY DASH
SPACE SEARCH
UNIVERSE
RATS
TANKER
PARACHUTE
JETMOBILE
HIGH RISE
THE FORCE
EXCHANGE



CASCADE SOFTWARE

NOW AVAILABLE FOR

Sinclair VIC-20

SPECTRUM

ZX81

LYNX

ORIC-1

DRAGON

ATARI

Apple (ON DISC & CASSETTE)

BBC A/B

We Buy Games/Contact Now



DIRECT MAIL ORDER FORM

CASCADE SOFTWARE

CASCADES HOUSE
BARGAN'S LANE
LLANDOGO
GWENT
S.WALES NP54PA

SUPPLY CASSETTE 50 FOR

COMPUTER

I enclose cheque/P.O.

Signature of Parent/Guardian _____

Name _____

Address _____

only
£9.95
inc. V.A.T. &
Post & Packaging

LR2

If you're a *serious* Sinclair user — why don't you stop playing games?



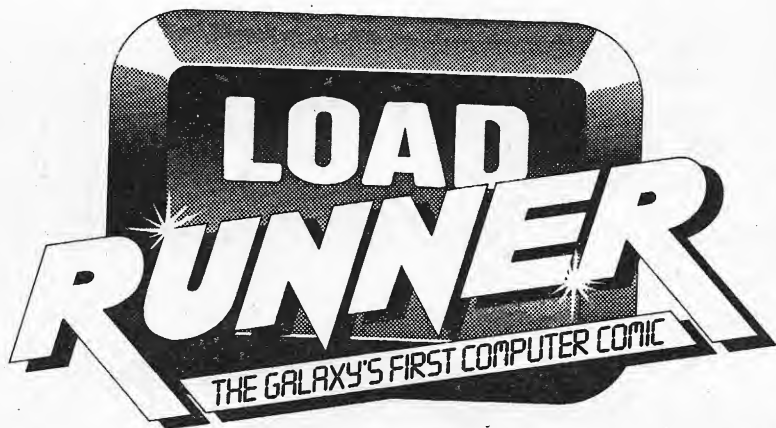
If you need a new challenge that doesn't involve saving the universe from destruction, beating off green monsters or flying a spaceship — we can bring you down to earth with stimulating, practical projects for the ZX81 and Spectrum in **Sinclair Projects** magazine!

In recent issues we have shown how to use your Sinclair for controlling your central heating . . . improving the graphics . . . build a printer interface . . . and many more ideas that tax your ability and ingenuity.

Sinclair Projects is published every two months as a glossy, instruction-packed magazine that gives you all the encouragement you need to exercise your talent and take a serious look at what your Sinclair can do for you.

Each issue can contain as many as FIVE step-by-step projects — yet it's yours for JUST 95p. So if you want a break from playing games, make sure you order YOUR **Sinclair Projects** from your newsagent today — or fill in the form below and we will send it direct to you, six times per year.

Mail to: ECC Publications Limited: 30-31 Islington Green, London N1 8BJ Yes — I'd like to subscribe to
Sinclair Projects (6 issues — price £9.90 including P&P) I enclose a cheque for £ _____
Please charge my credit card: Card name _____ Address _____ Number _____
Name _____ Signature _____ Date _____
NB This offer applies to UK subscribers only. Overseas rates available on request.



WHAT EXCELLENT judgment you have demonstrated by buying the second printout of the Galaxy's first computer comic. Reports flooding-in to my operators suggest that thousands of you enjoyed our first offering. We hope this remains the case.

Don't forget there is an extra special bonus to all of you who buy the first four issues. You will qualify for FREE membership of the Load Runner Decoders and receive your own Security Pass.

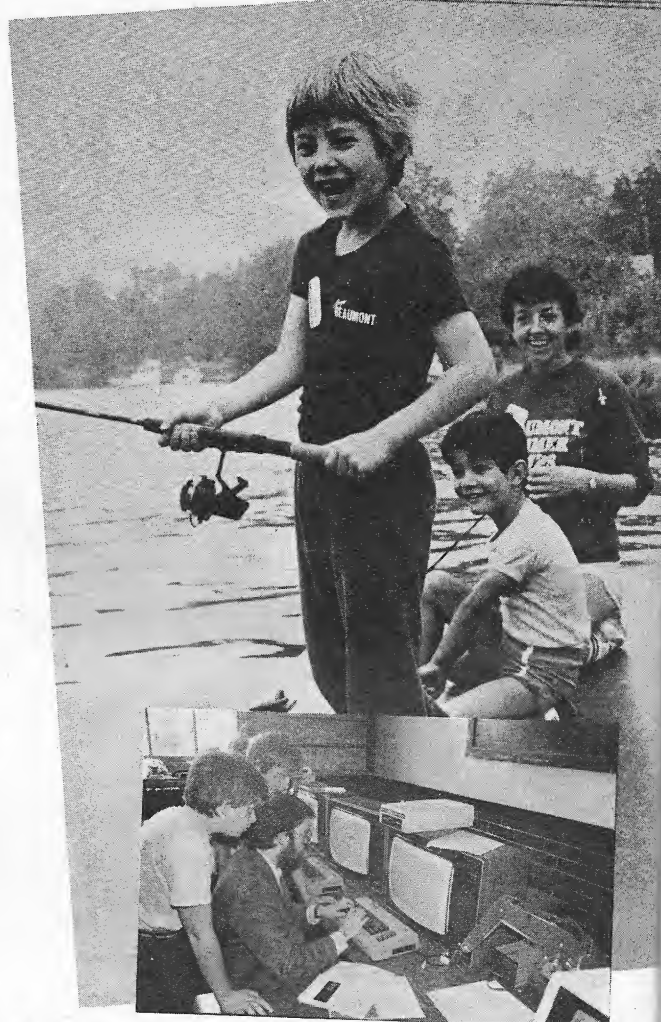
There will be many advantages in joining the Decoders and I will go into detail in future issues. For the time being simply remember to cut out the token below, save it, and when you have collected all four send them to me.

If you were unfortunate enough to miss printout one, I have a few filed at my installation base. Send a cheque or a postal order for 55 pence and I will ensure you receive one. Write to my programmers at ECC Publications, 30-31 Islington Green, London N1 8BJ.

The Controller



06



**Next Printout
WIN A
MATTEL
AQUARIUS
HOME COMPUTER**

**Place an order
with your
newsagent
NOW**

ON SALE JULY

CAMP BEAUMONT

DO YOU WANT to learn computing in the quiet seclusion of the country, away from the excessive demands of parents, brothers and sisters? Then computer camps are for you.

Computer camps for children are Britain's latest import from California. One of the biggest and most experienced camp operators is Camp Beaumont, which runs 10 camps throughout the country during the Easter and summer holiday periods.

The full residential camps in Devon, Sussex and the Lake District are for children aged from nine to 17. Non-residential camps at Windsor, Mill Hill, Westerham, Brentwood,

Charterhouse and Tabley House (Cheshire) are for the four-to-15-year-olds. The first summer camps will open on July 16.

More than 5,000 children are expected to take computing courses this summer and the facilities to accommodate them are impressive. At each centre Camp Beaumont will have up to 50 new microcomputers — Vic-20s and Commodore 64s — and more than £10,000 worth of peripheral equipment such as disc drives and printers.

The courses are entertaining and informative and instruction is planned so that children can learn at their own pace and in their own way.

During the week youngsters learn to write their own programs in Basic under the supervision of qualified computer science students and teachers. They are also free to program the the camp robot or play computer video games.

In the afternoons, everyone is free to join the other campers in some 30 sporting and creative activities, including swimming, sailing, pottery, windsurfing, dancing, horse riding and judo. For further information write to Camp Beaumont, 73 Upper Richmond Road, London SW15 2SZ. If you are feeling lucky, however, why not enter our exciting competition below?

Six holidays to be won

WIN A COMPUTER camp holiday. *Load Runner*, in conjunction with Camp Beaumont, is offering a free one-week residential holiday at the beautiful Camp Beaumont Lake District centre to each of the six winners of our simple competition.

The centre is a fine manor house set in 37 acres of private estate overlooking the river Caldew near Carlisle. It offers ideal opportunities for outward-bound activities, as well as providing expert tuition in computing. The holidays will be available for the week August 27 — September 3.

How to enter

To the right is a printout of a few of the activities and facilities available at the Lake District camp. There is also an activity which clearly is not available. Unfortunately, our printer has scrambled the letters and you must re-arrange them. One of them has already been completed for you.

When you have listed the unscrambled words, decide which activity or facility you think is most important in a successful computer camp holiday and enter the appropriate letter into the space provided. You must also decide which activity would not be available. Send your entries to: Computer Camp Competition, *Load Runner*, ECC Publications, 30-31 Islington Green, London N1 8BJ, to arrive not later than Friday, July 15 1983.

Winners will be decided on the basis of the first six correct entries opened.

The usual rules of the editor's decision being final and employees of ECC Publications and Camp Beaumont being ineligible apply.

- | | | |
|---|-------------------|-------------------|
| A | SCAIB MGRONIMAPGR | BASIC PROGRAMMING |
| B | CIGONANE | |
| C | LELF GWANLIK | |
| D | IGSFRUN | |
| E | NYOP KGREKNIT | |
| F | MOTECRUSP RFO LAL | |
| G | LAHHYET DOFO | |
| H | TEGRINEROINE | |

The activity/facility I think is most important is

The activity I would not expect to find is

Name

Address

Age

FABULOUS! SINCLAIR ADD-ON OFFER FOR ZX81 OWNERS

These are the real thing. Official Timex/Sinclair memory extensions made in the USA and specially screened to stop radio interference.

ME1 - 16 USA £15.99

SPECTRUM OWNERS

With our ME48 memory expansion add-ons your ZX Spectrum can increase its capacity by up to three times.

- * no soldering
- * easy to fit
- * simply plug in
- * fully guaranteed
- * no loss of memory through wobble or white out

NB. Before ordering your Spectrum add-on please check which spectrum you have in your possession. At the back of the ZX Spectrum the metallic contact strips can be clearly viewed. In the series A the space separating the strips is the same width as the strips. In the series B the strips are twice as wide as the space between.

ME48 Series A £34.50 Series B £23.00

COMPUTER ADD-ONS

7-9 Thane Works, Thane Villas, London N7 7PH Tel: 01-609 7919

Please tick the appropriate box to order

ZX81 ME1-16 USA ☐ Spectrum ME48 Series A ☐ Spectrum ME48 Series B ☐
Add 40p post and packaging to your order.

Herewith cheque/PO for £

made payable to Computer Add-Ons or if you would like to pay by Access or Barclaycard enter your acc number and signature.

Signature _____

Date _____

Name _____

Address _____

Occupation _____

Computer Add-Ons 7-9 Thane Works, Thane Villas, London N7

LR

CHILDREN'S EDUCATIONAL SOFTWARE

The MICRO MASTER Series for 7-13 years (any SPECTRUM)

RESEARCHED, DESIGNED AND TESTED by teachers with just one aim TEACHING. Easy to use — just RUN.

THE FOUR RULES OF NUMBER

(A package of 5 programmes)

This package promotes FAST and ACCURATE calculation ability at increasingly difficult levels. It is very EFFECTIVE as can be seen by consulting the enclosed grading tables for assessments of pupil's performance (given his age).

LANGUAGE DEVELOPMENT SERIES

(10 programmes on each cassette)

To develop VOCABULARY, SPELLING, CONCEPT ATTAINMENT, VERBAL REASONING and KNOWLEDGE OF THE ENGLISH LANGUAGE.

A complete series tailored to each age group. Used for remediation and, at the highest levels, for COMMON ENTRANCE etc.

THE FOUR RULES PACKAGE

£11.70

LANGUAGE DEVELOPMENT CASSETTE

£7.90

(State pupil's age.)

1 of each £14.50

Cheques to MICRO MASTER, Dept. LR, 94 Airedale Ave, Chiswick, London W4 2NN. For further details phone Dr. K. W. Glasson 01-747 1373.

**EXPERIENCED SINCLAIR/COMMODORE PROGRAMMERS
REQUIRED IN WEST LONDON**

EXCLUSIVE LOAD RUNNER OFFER

WOW! 2
fantastic games
on 1 tape!
Mr. Munch has
to be the best
Arcade game
I've played on
my ZX81.
ALL MACHINE
CODE!!



and this
version of
the classic
Invaders
is terrific
too! 2
Great Games
for just
£3.75!



Send a cheque or postal order payable to Mr. Micro at the address below.

No of tapes ☐ amount enclosed £

Name _____

Address _____

Mr. Micro Ltd., 69 Partington Lane,
Swinton, Manchester M27 3AL.

This offer ends July 31st 1983.





PAUL HAS BEEN UPDATING HIS HISTORY NOTES ON HIS AKRON 90 HOME COMPUTER, WHEN IT BEGAN PRODUCING SOME VERY PECULIAR PROGRAMS...

TIME 9 PLAN 9



IT DOES WHAT?

IT KEEPS ON GIVING ME PROGRAMS I DON'T PUT IN.



AT LEAST, I THINK THEY'RE PROGRAMS.

IT SAYS 'TIME PLAN' THEN A SERIES OF NUMBERS.

LOOK, ALL WE'VE GOT THIS AFTERNOON IS GAMES. WHY DON'T WE SNEAK BACK TO YOUR PLACE AND YOU CAN SHOW ME?



IF MY MOTHER CATCHES US I'LL BE IN TROUBLE.

DON'T WORRY ABOUT THAT, YOUR COMPUTER'S MORE IMPORTANT!

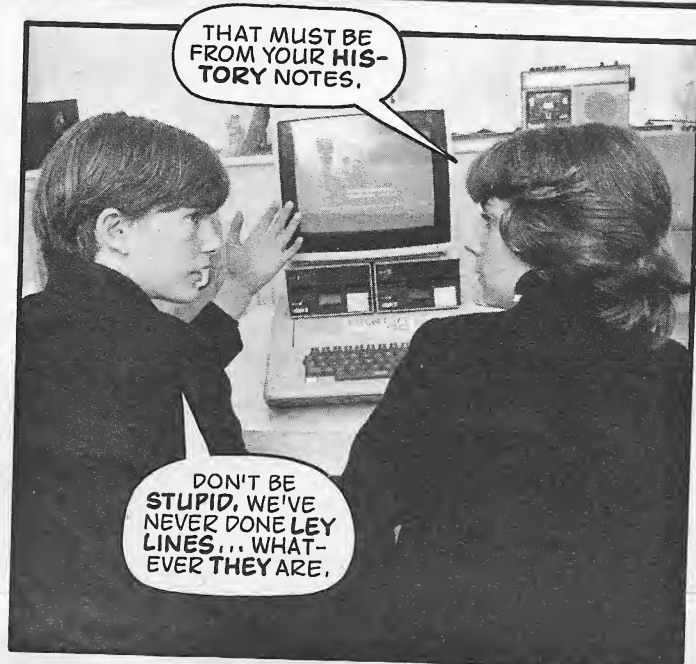
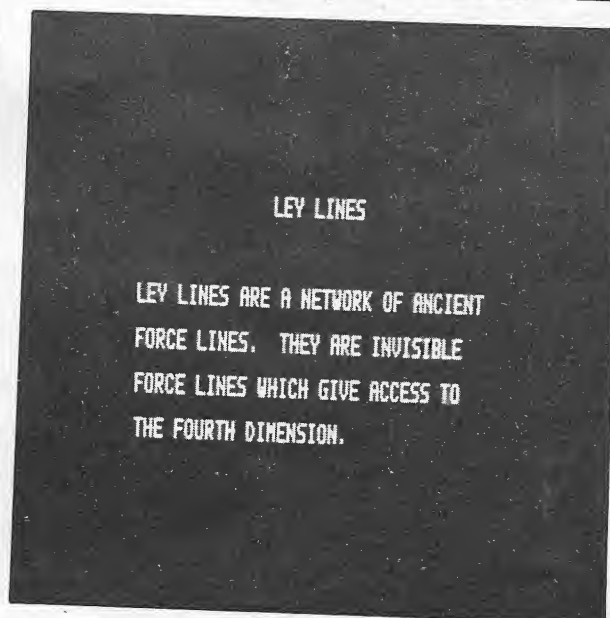


CAN I COME?

YOU DON'T KNOW ANYTHING ABOUT COMPUTERS.

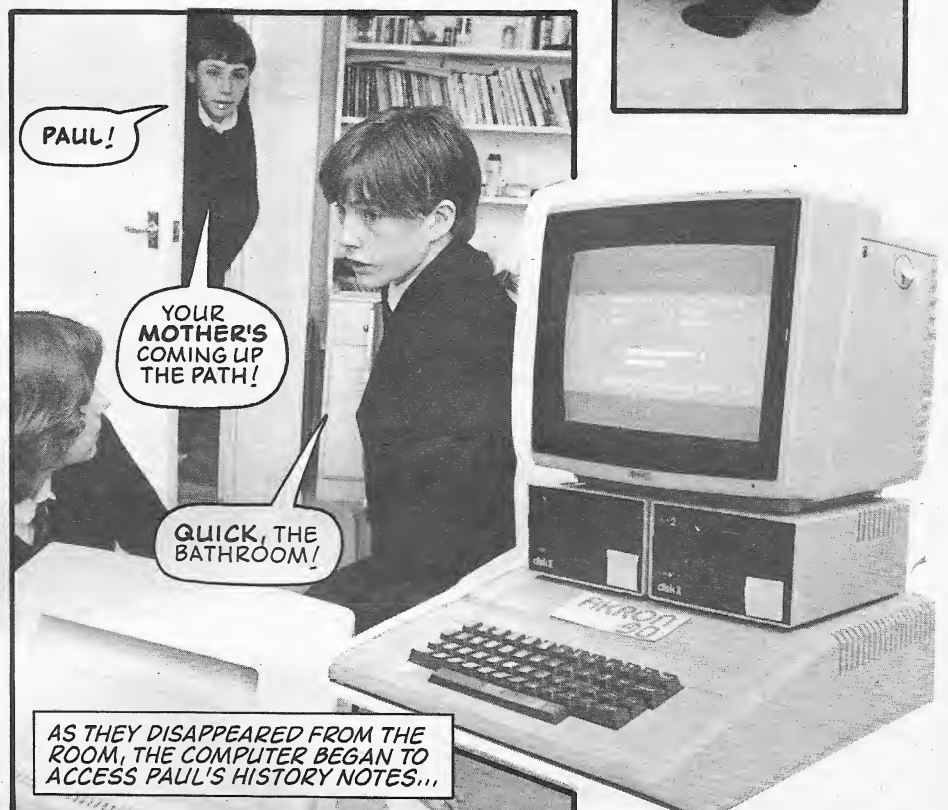
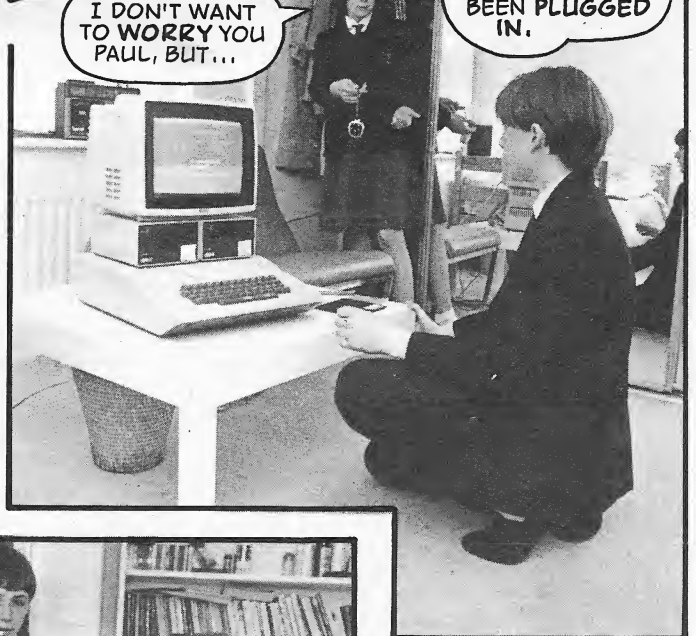
YEAH, BUT I CAN KEEP A LOOK-OUT FOR YOUR MUM!

STORY- FRANK HOPKINSON
PHOTOS- HENRY ARDEN
LETTERS- S. CRADDOCK



LEY LINES

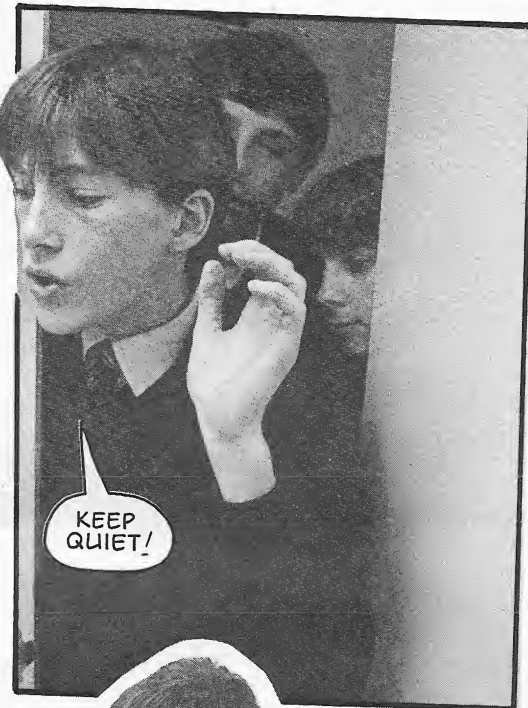
THIS HOUSE IS AT THE CENTRE OF THREE LEY LINES WHICH MEET. IT IS A CONFLUENCE WHERE THE FORCES OF TIME AND SPACE ARE FOCUSED INTO ONE POINT. OTHER CENTRES INCLUDE STONEHENGE AND VARMINSTER, SITES TRADITIONALLY ASSOCIATED WITH THE PARANORMAL. CENTRES OF THE FOURTH DIMENSION.



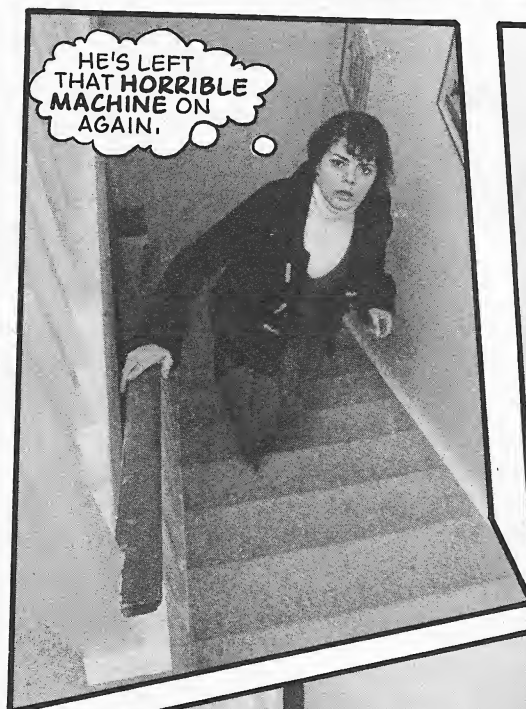


PAUL?

IS THAT YOU
UPSTAIRS?



KEEP
QUIET!

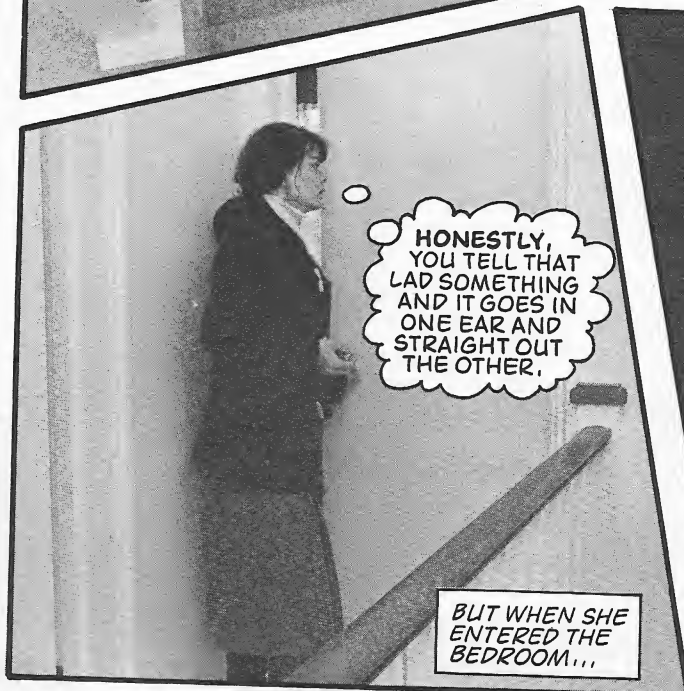


HE'S LEFT
THAT HORRIBLE
MACHINE ON
AGAIN.



WHAT
HAPPENS IF
SHE FINDS US
IN HERE?

IF YOU DON'T
SHUT UP, YOU'LL
FIND OUT.



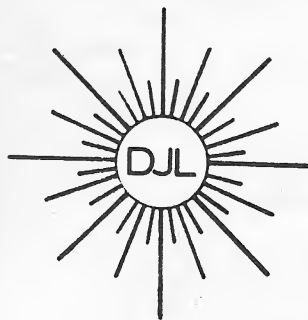
HONESTLY,
YOU TELL THAT
LAD SOMETHING
AND IT GOES IN
ONE EAR AND
STRAIGHT OUT
THE OTHER.

BUT WHEN SHE
ENTERED THE
BEDROOM...



... THE COMPUTER HAD PRO-
DUCED QUITE A SURPRISE
FROM PAUL'S HISTORY NOTES!

CONTINUED
NEXT ISSUE.



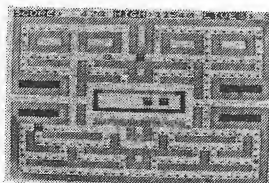
DJL SOFTWARE

DEPT LR, 9 TWEED CLOSE, SWINDON, WILTS SN2 3PU

Tel: (0793) 724317 Trade enquiries welcome

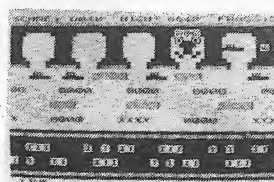
Export Orders: Please add £1.00 per tape airmail

★ **NEW** ★
Spectrum 16/48K
version of
2-man £5.95



ZUCKMAN ZX81 (16K)

- * ALL MACHINE CODE (10K)
 - * FOUR INDEPENDENT GHOSTS
 - * HIGH-SCORE 'HALL OF FAME'
 - * AUTHENTIC ARCADE ACTION
 - * TITLE/DISPLAY MODE
- ONLY £4.95 INC. P&P



FROGGY ZX81 (16K)

- * MOVING CARS, LOGS, TURTLES
 - * ALLIGATORS, DIVING TURTLES
 - * FOUR 'SCREENS' OF ACTION
 - * ALL ARCADE FEATURES
 - * ENTIRELY MACHINE CODE
- ONLY £4.95 INC. P&P

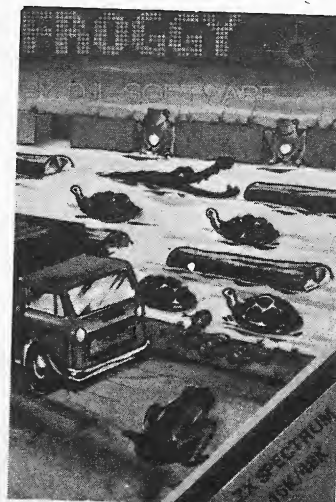
★ **NEW** ZX Spectrum **NEW** FROGGY 16K or 48K

SPECTRUM VERSION OF
ARCADE GAME WITH FULL ARCADE
FEATURES:

- ★ Fabulous Hi-Res Colour Graphics
- ★ Authentic Sound Effects + 3 Tunes
- ★ 3-D Logs, Swimming & Diving Turtles
- ★ 3 Lanes of Multi-coloured vehicles
- ★ On-screen Score, Hi-Score, Time-bar
- ★ Snake, Alligators and Baby Frog
- ★ 'Top 5' High-Score initials table
- ★ Demonstration Game routine

Your home-sick frog must leap across a busy main road, then onto logs and turtles in the river to reach safety of the river-bank frog-homes. THIS MACHINE-CODE GAME MUST BE SEEN TO BE BELIEVED!!

ONLY £5.95 INC. P & P



BARGAIN-HUNTERS READ THIS!

Whatever your model of Sinclair computer—you can get HOURS of fun, intellectual satisfaction and education for just 95p per month!

A bargain?

That's **Sinclair Programs** magazine—the fat, glossy magazine that's PACKED with original, tested programs for you to load and run.

With **Sinclair Programs** every month you can build the library of programs that suits your mood: in recent issues we have challenged our readers with programs to test their skill at Sharpshooter or Laser Cannon . . . jolt their brain cells with Quadratic Equation or Monster Maths . . . or take a practical turn with their own word processor program or graphic generator.

That is just a fraction of what you get from **Sinclair Programs**. Each month we have 40 programs for owners of ZX80s, ZX81s and Spectrums. But make sure you don't have to hunt TOO far for your bargains—**Sinclair Programs** always sells out quickly, so order yours TODAY from your newsagent, or fill in the form below and we will send it direct to you, every month.

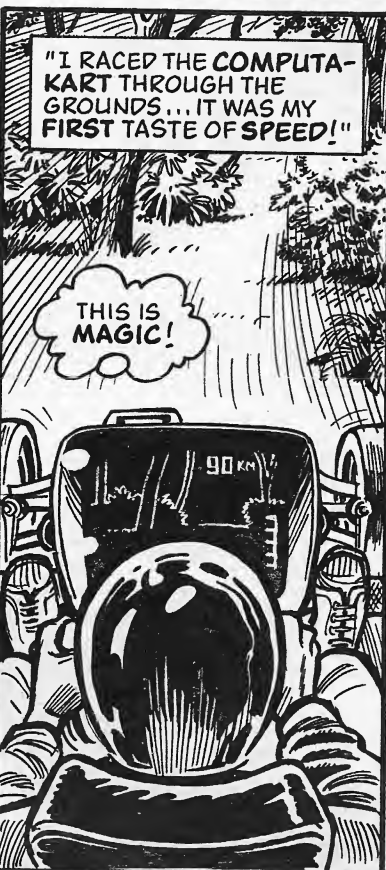
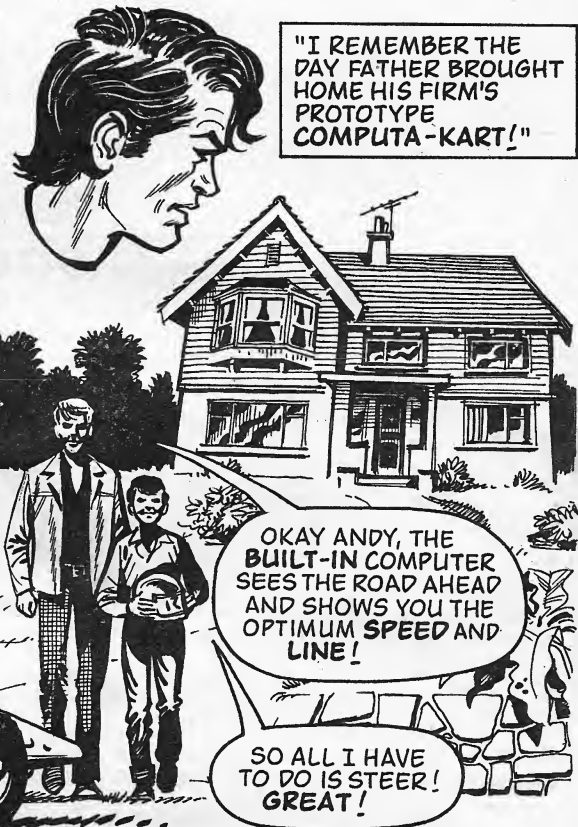


Mail to: ECC Publications Limited, 30-31 Islington Green, London N1 8BJ Yes — I'd like to subscribe to
Sinclair Programs (12 issues — price £13.20) I enclose a cheque for £ _____ Please charge my
credit card Card: name _____ Number _____
Name _____ Address _____ Date _____
Signature _____ NB This offer applies to UK subscribers
only. Overseas rates available
on request.

Andy Royd-the DOMINATORS

DISGUISED AS A ROBO-PLAYER, ANDY ROYD HAS SAVED DAVY'S DOMINATORS FROM RELEGATION WITH THE LAST MATCH OF THE 1993 SEASON...

Rogue star!



"I LIVED... BUT ONLY JUST!"

I KNOW OF ONLY ONE MAN WHO CAN HELP HIM! HE'S A SPECIALIST AT OUR MEDICAL RESEARCH DEPARTMENT.

"THE SPECIALIST OFFERED A SLIM RAY OF HOPE..."

THE CRASH HELMET PROTECTED HIS BRAIN FUNCTIONS, BUT HIS LIMBS ARE SHATTERED. HIS ONLY CHANCE IS TO TRY SOMETHING STILL IN THE EXPERIMENTAL STAGE!

YOU'VE GOT TO TRY, DOCTOR! HE'S OUR ONLY SON!

"AS I FOUND OUT LATER, REBUILDING MY BODY WAS A LONG AND DIFFICULT JOB!"

MR AND MRS ROYD... THIS OPERATION COULD BE A BREAKTHROUGH IN MEDICAL SCIENCE, BUT IT MUST ALWAYS REMAIN A SECRET!

"MY PARENTS AGREED. ALL THEY WANTED WAS TO SEE ME WELL AGAIN."

"AND A FEW WEEKS LATER, I WAS UP AND ABOUT..."

HE'S GOT A LOT OF WORK AHEAD OF HIM, BUT THE SYNAPSE LINKS SEEM TO BE OK, AND THE REGENERATION CELLS WE DESIGNED FOR HIS ARTIFICIAL LIMBS WILL HOPEFULLY GROW WITH HIM!

YOU'VE WORKED MIRACLES, GERRY!

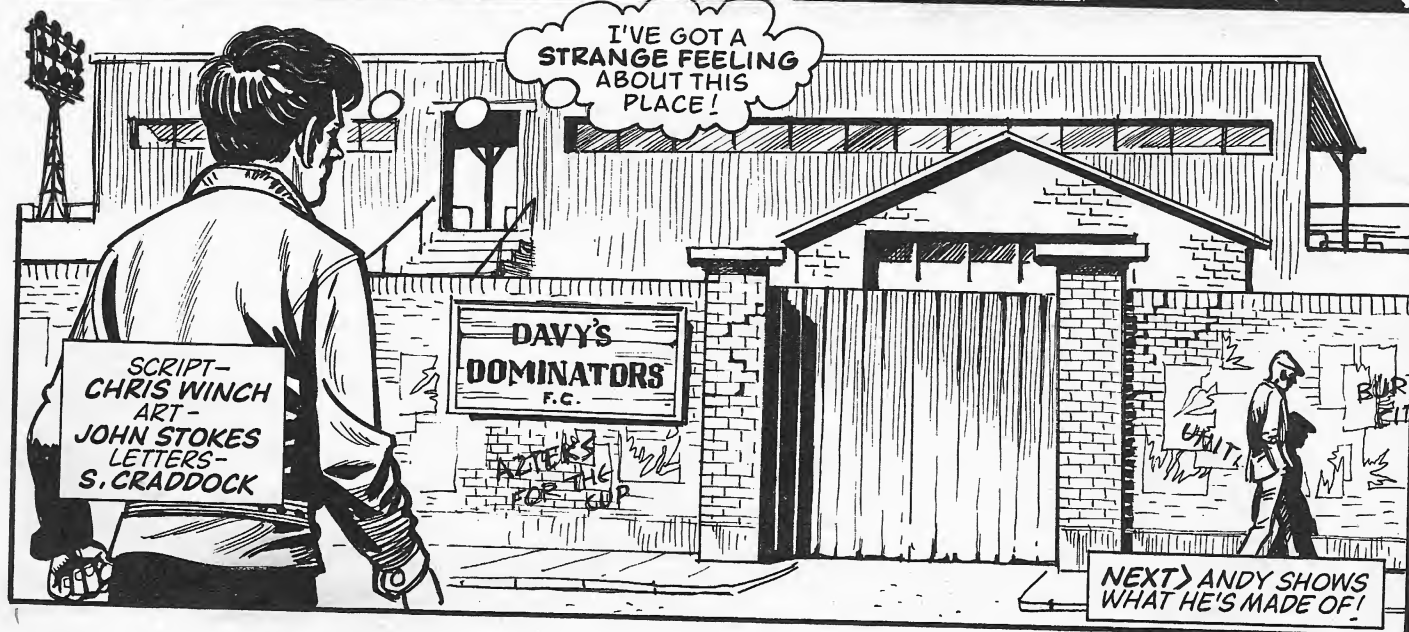
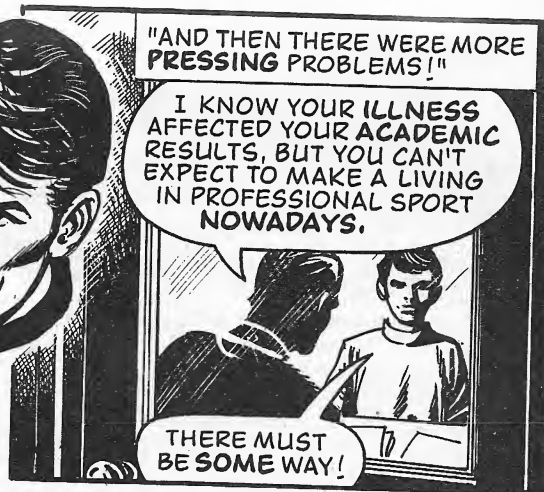
I'LL SEE YOU AT THE LAB TOMORROW.

"IGNORING THE PAIN, I FORCED MYSELF BACK TO FITNESS."

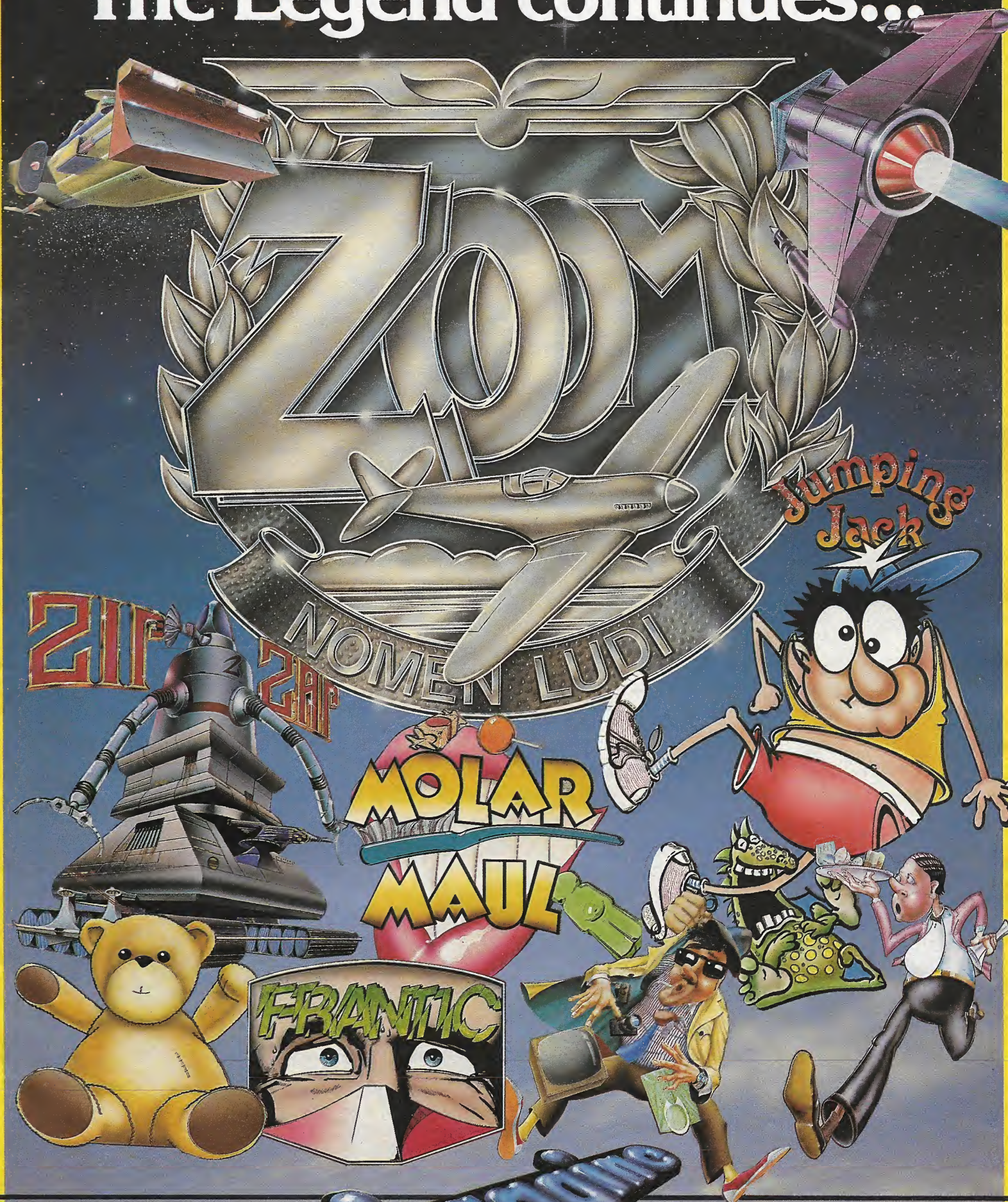
"AT SCHOOL, MY SECRET BIO-MECHANICAL ADVANTAGES AND NATURAL SPORTING BRAIN HELPED ME ACHIEVE REMARKABLE FEATS."

WE CAN'T LET HIM COMPETE ANYMORE.

HE WIPES THE FLOOR WITH ALL THE OPPOSITION!



The Legend continues...



Imagine games available from
**W.H. SMITH, Boots,
John Menzies, Dixons,
Laskys, Photomarkets U.K.**

and all other good
Software Outlets.

Imagine Software, Masons Buildings, Exchange Street East, Liverpool, Merseyside L2 3PN.

**..the name
of the game**

Any of these games for just

£5.50

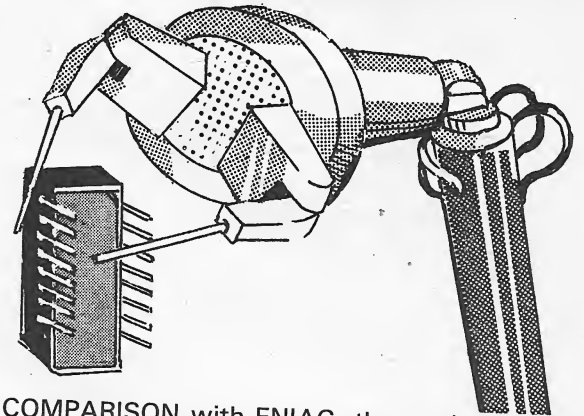
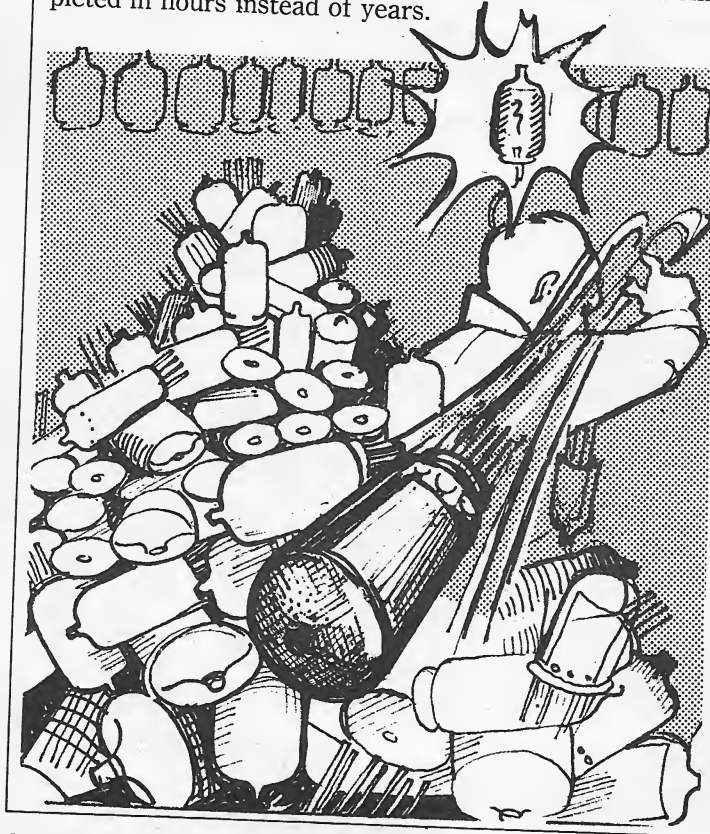
EACH

including first class post,
packaging, VAT and an
(UNCONDITIONAL
LIFETIME
GUARANTEE.

If you have any difficulty in
obtaining any Imagine Games
ring Imagine Direct on
051-236 6849 to place
your order.

The Astounding World of Computafax

THE FIRST electronic digital computer was called ENIAC — Electronic Numerical Integrator And Calculator — and was designed by the University of Pennsylvania in 1945. It took two years and half a million dollars to build and its 10,000 valves occupied the space of a house. A valve would fail every eight minutes and it consumed sufficient power to drive a locomotive. Despite that expense, ENIAC was a breakthrough in computer development, enabling nuclear physics calculations to be completed in hours instead of years.



BY COMPARISON with ENIAC, the modern-day micro can be built quickly and cheaply, incorporating a silicon chip which costs less than five dollars, consumes very little electricity, and has the equivalent of 14,000 transistors in a square centimetre. The capacity of a microcomputer is greater than that of ENIAC; it performs calculations 20 times faster and, of course, very rarely breaks down.



WHEN TAITO INC first released the arcade game Space Invaders on an unsuspecting Japanese public in 1978, it caused such immediate addiction that no-one could use a telephone call box or buy a subway ticket due to the sudden shortage of coins.

The Computer Story

A HISTORY OF COMPUTERS
PART TWO

ALTHOUGH THE ABACUS WAS BEING USED OVER 5,000 YEARS AGO, THE NEXT IMPORTANT STAGE IN CALCULATING AIDS DIDN'T OCCUR UNTIL ABOUT 350 YEARS AGO. IN 17TH. CENTURY EUROPE SCIENCE STARTED TO GROW RAPIDLY — HELPING MANKIND TO UNDERSTAND HIS UNIVERSE AND SOLVE HIS DAY-TO-DAY PROBLEMS.

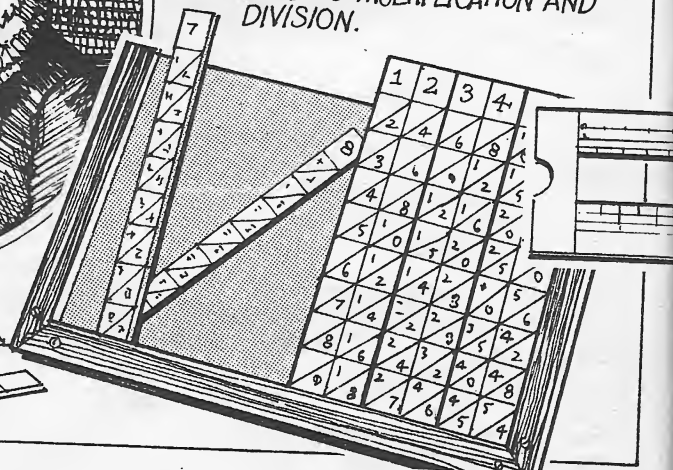
CALCULATING AIDS...



IN 1614 JOHN NAPIER (LEFT), ANNOUNCED HIS INVENTION OF LOGARITHMS.

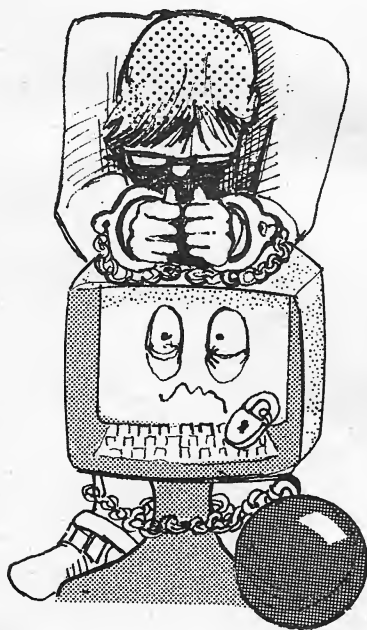
IN THIS SYSTEM, MULTIPLICATION AND DIVISION CAN BE DONE BY ADDING AND SUBTRACTING RELATED NUMBERS.

HE ALSO INVENTED A SYSTEM OF STICKS (CALLED "NAPIER'S BONES" BECAUSE THEY WERE MADE OF IVORY) AS AN AID TO MULTIPLICATION AND DIVISION.



THEFT BY COMPUTER is believed to account for £2 million in lost revenue every day. One of the most famous of computer crimes was the theft in January, 1971 of trade secrets worth \$25,000 in Sacramento, California. The criminal, a clever and ambitious programmer, telephoned a rival company's Univac 1108 computer and requested a copy of the company's secret software program, which the computer dutifully delivered.

The police succeeded in tracing the call and the programmer was arrested. The case was also the first in which a search warrant was issued to search a computer's memory banks for evidence.



● **Buzzwords** are the jargon of the computer world and can be very confusing. Below, *Load Runner* continues its glossary of computing terms. Get buzzing.

● **Artificial intelligence.** Programming the computer to act as if it is thinking. Making a computer perform tasks which normally need some kind of human intelligence.

● **ASCII.** American Standard Code for Information Interchange. A code which is used for all microcomputers to talk to each other and to understand each other.

● **Assembler.** A program which allows a computer programmer to use meaningful instructions instead of numbers when programming in machine code.

● **Audio cassette.** An ordinary tape recorder cassette which picks up sound.

● **Audio response unit.** This device will speak to you if you program it in the correct way. It performs like the speech boxes which are used by computers in science fiction films.

● **Audit trail.** The computer produces a report on what it has been doing and who has used it within a certain time span.

● **Auto start.** Sometimes used in computer manufacturers' descriptions

of a machine. It means that the machine will be ready to use when switched on and does not need a special program to be fed into it to work.

● **Auxiliary storage.** Storage devices, such as tape and disc which are not part of the standard computer system.

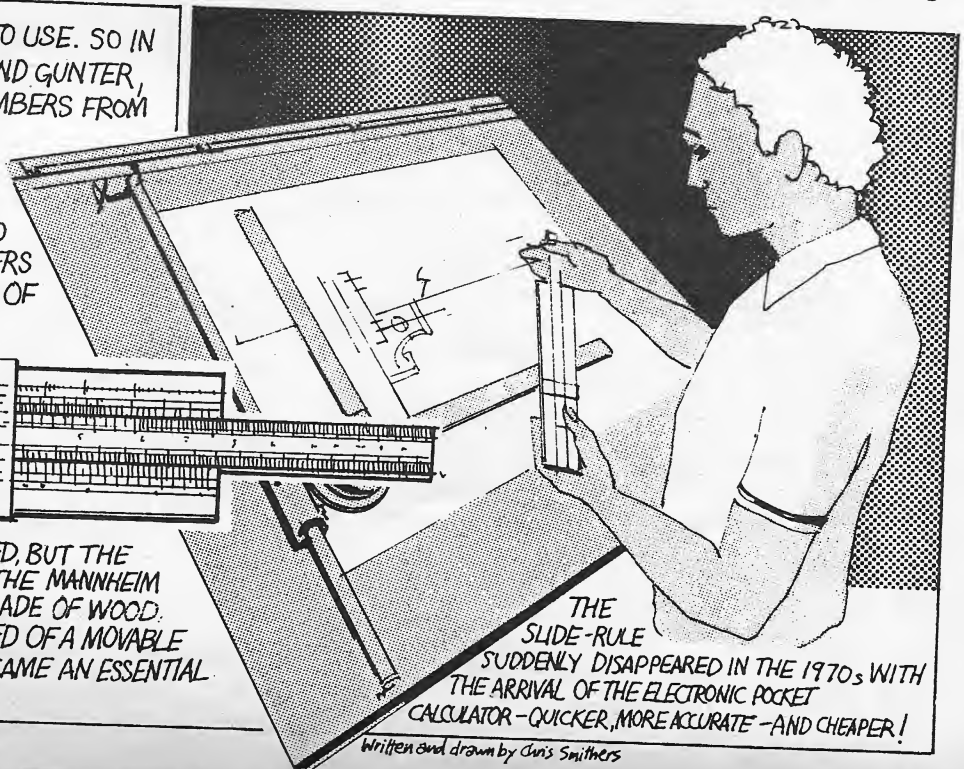
● **Backing storage.** Has the same meaning as auxiliary storage.

● **Back-up.** Any device which will save the information on a computer if the power fails or if information is lost in any other manner.

● **Bar code.** The block of black lines which you find on some products, such as food or books. The lines represent information which can be decoded by a computer. On food, the lines usually represent such items as price, code number and date of sale by the manufacturer.

● **Basic.** Beginner's All-purpose Symbolic Instruction Code. The language which most microcomputers use. It allows the user to program in a language almost like English in structure. The language is learned by most beginners when they start computing and is taught in schools for computer O level studies.

LOGARITHMIC TABLES WERE SLOW TO USE. SO IN 1620 ANOTHER ENGLISHMAN, EDMUND GUNTER, DEvised A RULE MARKED OFF IN NUMBERS FROM ONE END PROPORTIONAL TO THEIR LOGARITHM. CALCULATION WAS DONE BY MARKING OFF LENGTHS WITH DIVIDERS. A YEAR LATER THE REVEREND WILLIAM OUGHTRED REALISED THE DIVIDERS COULD BE REPLACED BY SLIDING A PAIR OF RULES ALONGSIDE EACH OTHER.

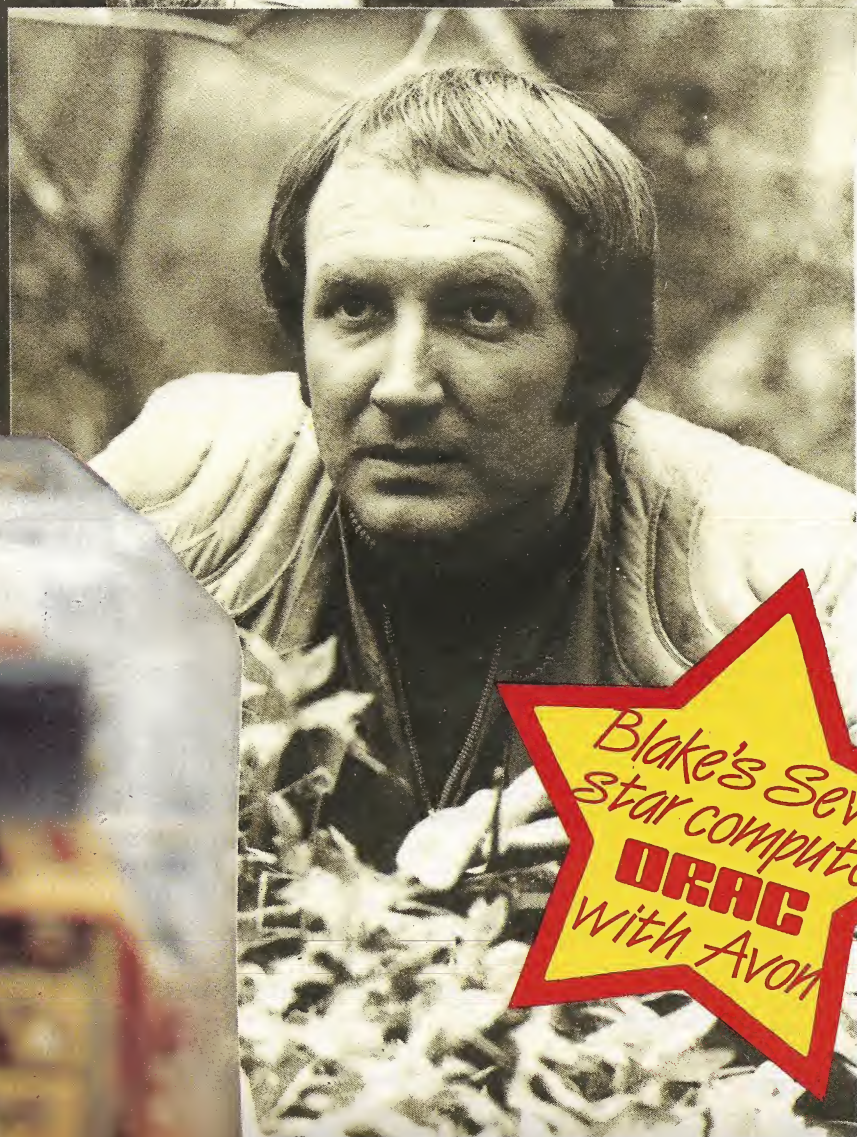
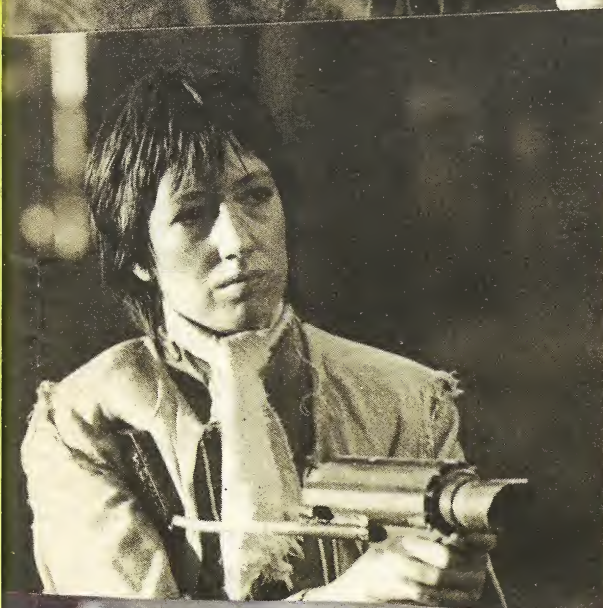


MANY PATTERNS OF SLIDE-RULE EMERGED, BUT THE MOST POPULAR VERSION WAS BASED ON THE MANNHEIM SCALE, INVENTED IN FRANCE IN 1850. MADE OF WOOD, AND LATER PLASTIC (ABOVE), IT CONSISTED OF A MOVABLE SLIDE AND CURSOR IN A FIXED STOCK. IT BECAME AN ESSENTIAL TOOL FOR ENGINEERS AND SCIENTISTS.

THE SLIDE-RULE SUDDENLY DISAPPEARED IN THE 1970s WITH THE ARRIVAL OF THE ELECTRONIC POCKET CALCULATOR - QUICKER, MORE ACCURATE - AND CHEAPER!

Written and drawn by Gus Smithers





Blake's Seven
star computer
ORAC
with Avon

Shut down all systems! It's . . .

COUNT DOWN TO CHAOS



by Philip Steele

The fate of mankind is decided in space or so people thought long ago. Comets brought doom and destruction in their wake. The murder of Julius Caesar, the Battle of Hastings. Today, of course, scientists don't believe in such things but when one day a comet is reported as passing close to our planet, Joe and Ellie notice some very strange things happening. The computer at their school goes haywire for a start. Electronic failure closes the car factory where their dad works. As systems fail all over the city, panic sets in . . .

HEATHROW AIRPORT, 1930 hrs. A clear night and an easy landing ahead. Beneath the huge silhouette of the jumbo jet lay the clustered lights of London. Flight engineer Tom Maclure ran his experienced eye over the bewildering array of dials in front of him. No problems tonight. Captain Leroy March gave the thumbs-up to first officer Ken Jones. The whine of the engines became a deafening roar.

Flight crews are trained to expect emergencies. They can keep level-headed when you or I would be running scared—but suddenly even Captain March lost his cool.

"Good grief, that came from nowhere," exclaimed March, as a small executive jet flew straight at them. They could see the white face of its pilot as it screamed out of their flight path in a steep bank.

"Oh, boy!" Their headphones were suddenly filled with confused jabbering and a crackling noise.

"Captain, I think that was a distress call from the control tower."

"Everything has gone dead."

"Problems with the readings here, boys", chipped in Tom Maclure.

"Well, we're going down", snapped March decisively. "Cabin crew stand by . . ."

The gigantic metal frame of the jumbo eased itself down out of the night sky to an airport with a control

"The computers have caught some disease," said Joe. "You know, like the great plague."

tower which was suddenly silent, its computer systems shutting-down one after the other. The lives of 520 passengers hung in the balance . . .

Good evening, and welcome to *Headline*, a programme of news and current events . . .

Joe and Ellie were eating their supper in front of the TV. Their mother was at the table prising the back from a hi-fi amplifier with a screwdriver.

"You'll never fix it, mum", said Ellie.

"Would you like to bet?" came the dogged reply.

"In tonight's programme we report on microchip may-



"We're going down", snapped March decisively.

hem, but first, the news. Chaos reigned this evening at London's Heathrow Airport as all its computer systems failed. A jumbo jet recorded a near miss on approaching the airport and clipped the wing of a stationary Concorde. Due to the skill of the jumbo pilot, Captain Leroy March, there were no injuries among the passengers. With flight bookings in confusion, it was a tourist nightmare. All arrivals and departures have now been cancelled and the airport is now closed.

"Trouble hit British Rail today, too. Its Southern Region service also suffered computer failure during rush hour this afternoon, resulting in misery for thousands of commuters. Derailments and collisions were avoided but rail traffic was reduced to a crawl and the trouble is now said to be spreading to other major cities ..."

"Joe, I knew it!" cried Ellie. "We were right about everything breaking down and all the micros going nutty."

"Well, if all the computers are falling to bits, it's good riddance as far as I'm concerned", interrupted mum. "I mean, look at this stupid box". The amplifier lay in pieces across the table.

"If you ask me these blooming microchips have a lot to answer for".

"Don't be daft, mum", said Ellie. "Just think where we would be without computers: hospitals, offices, airports—we really need them."

"Ssh! Listen to what they're saying on the box", said Joe.

"As Britain's computers run amok, we ask why, and look at the likely outcome. Could it be sabotage? Is some foreign power trying to take us over? It seems unlikely, for within the last hour reports have been coming in from all over the world of systems failures. In the United States the banks have closed. A Soviet rocket lost control shortly after take-off and came down in the Gobi desert ..."

"It sounds like the computers have caught some disease", said Joe. "You know, like the great plague. We read about it at school. Bring out your dead!"

"I don't understand how metal machines can catch a cold or something", said mum. "They're not human, for heaven's sake. Oh, where's your father? He doesn't run on microchips; he should be home by now. I'll bet he's sitting in the pub with his mates from work".

"Mum, just think what the breakdown will mean at dad's factory", said Ellie. "You know how they have those new robots on the assembly line".

"Oh dear, I hope they don't lay him off. Do you think he's all right? Perhaps I should call the factory gate to see if he's checked out. Turn down that racket".

Joe turned down the TV as mum dialled. "Hello? Who? Battersea Dogs' Home? I do beg your pardon." She dialled again. "Hello? Hello? New York? No! What? Oh, it's gone dead. The telephones as well. Oh, this is really getting beyond a joke. Why doesn't somebody do something?"

Joe smiled. "Don't worry, mum. They'll sort it out and I expect dad will be back soon."

Then the television screen went blank. That too? No, it flickered back to life and cut to the Prime Minister. For once he wasn't pretending to smile. He wasn't even puffing at a pipe but looked pale and drawn.

"My fellow countrymen, I have to ask you to prepare for an event so dreadful that it remains without equal in history, but I beg you to remain calm. It seems that our country is under attack from nuclear missiles. In about four minutes' time the first ..."

Suddenly the picture disappeared and the sound faded away. There was a stunned silence. Joe and Ellie stared at the tiny spot of light which disappeared slowly from the centre of the screen. Their mum stood up and sat down again.

"What? Oh, what should we do? Oh, no, no". She held her head in her hands. "Where's your father? Joe and Ellie went towards her; they were shaking. They huddled

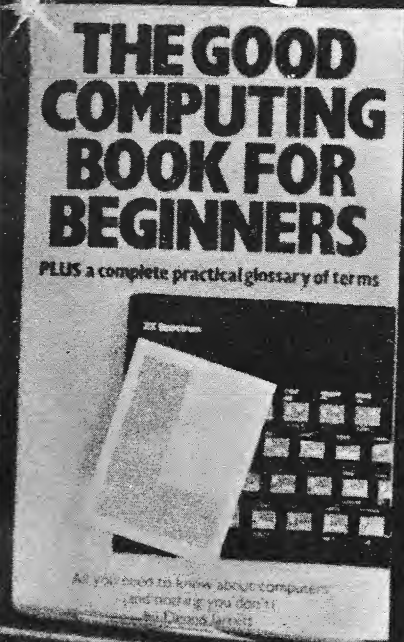
"I beg you to remain calm. It seems that our country is under attack from nuclear missiles"

in a little group at the table. The silence which filled the room seemed to spread and fill the whole city. Every minute seemed to last a lifetime.

There was a new light in the sky that night—a ghostly glow. It was no missile, although some who had seen the television broadcast assumed that it was the first—and last—shot of the third world war. The light was the comet, passing closer to Earth than any before. If it was the harbinger of disaster, it was certainly breathing down our very necks. It would be a close-run thing.

CONTINUED IN NEXT ISSUE.

Second
Edition Just
published



If you only buy **ONE**
computing book

THIS IS THE CLASSIC!

An entertaining, but **thorough** reference source with the most readable, comprehensive glossary you'll find anywhere. The Good Computing Book for Beginners is an essential A-Z of all the facts you need to know about computing — and none you don't!

Whether you're brand new to computing, or an old hand keen to stay ahead, you'll score by keeping this classic, top-selling book within reach to use again and again.

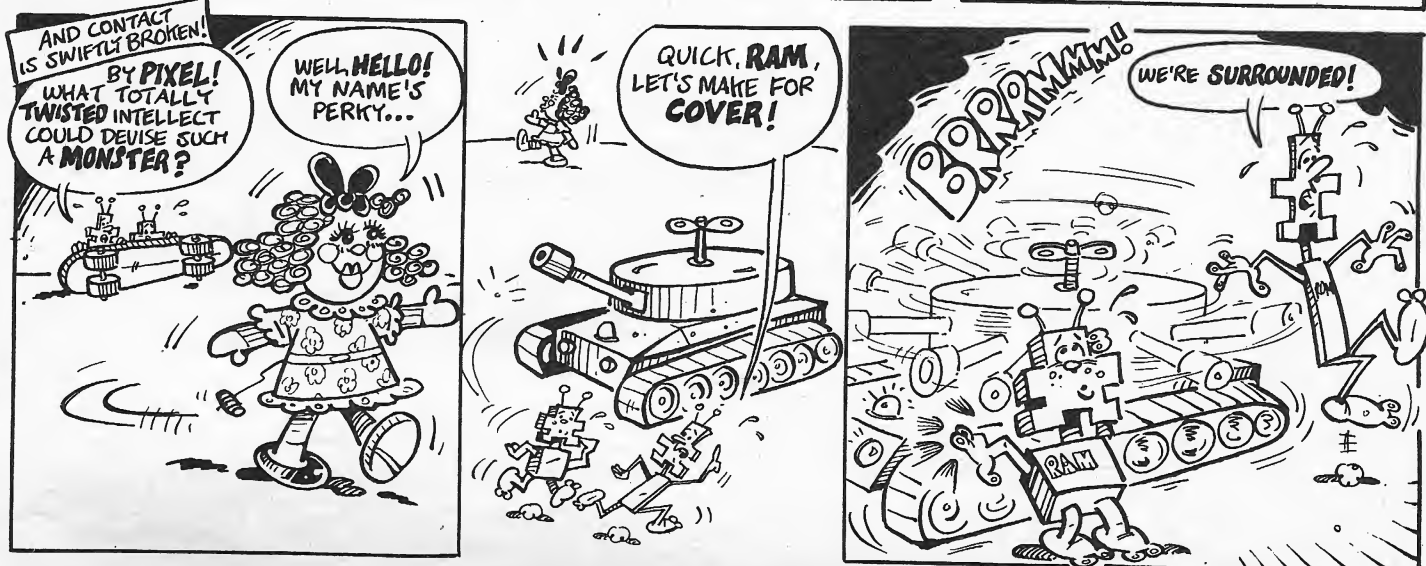
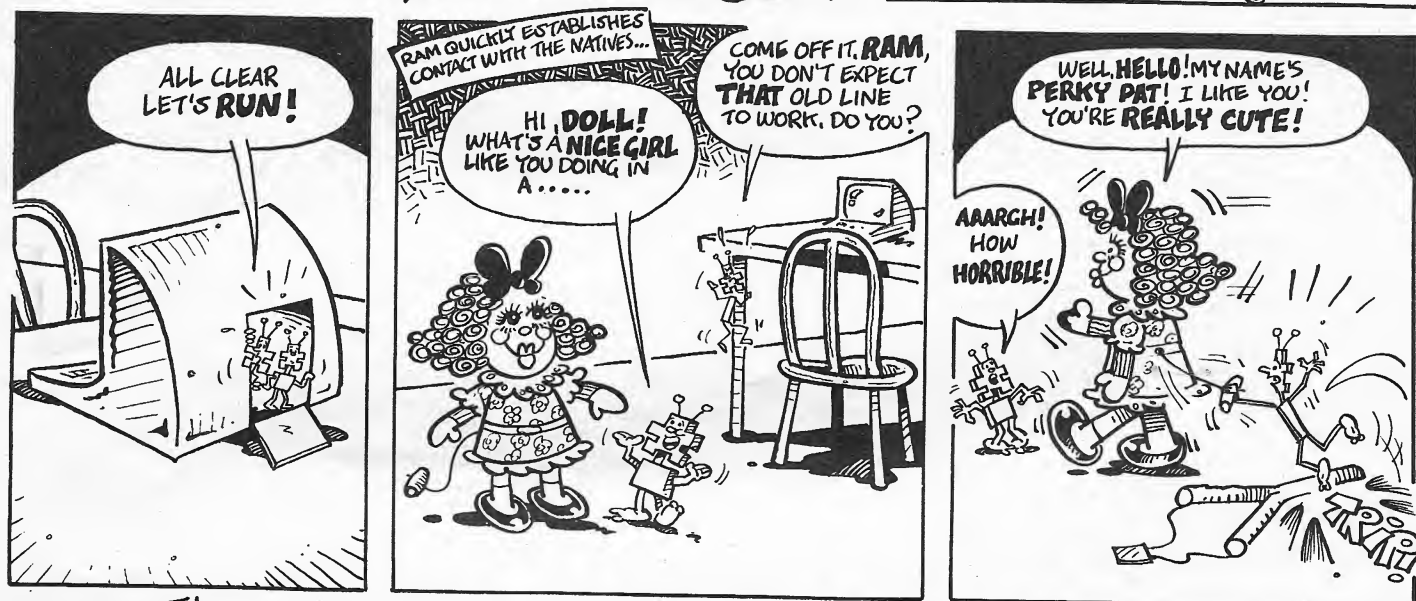
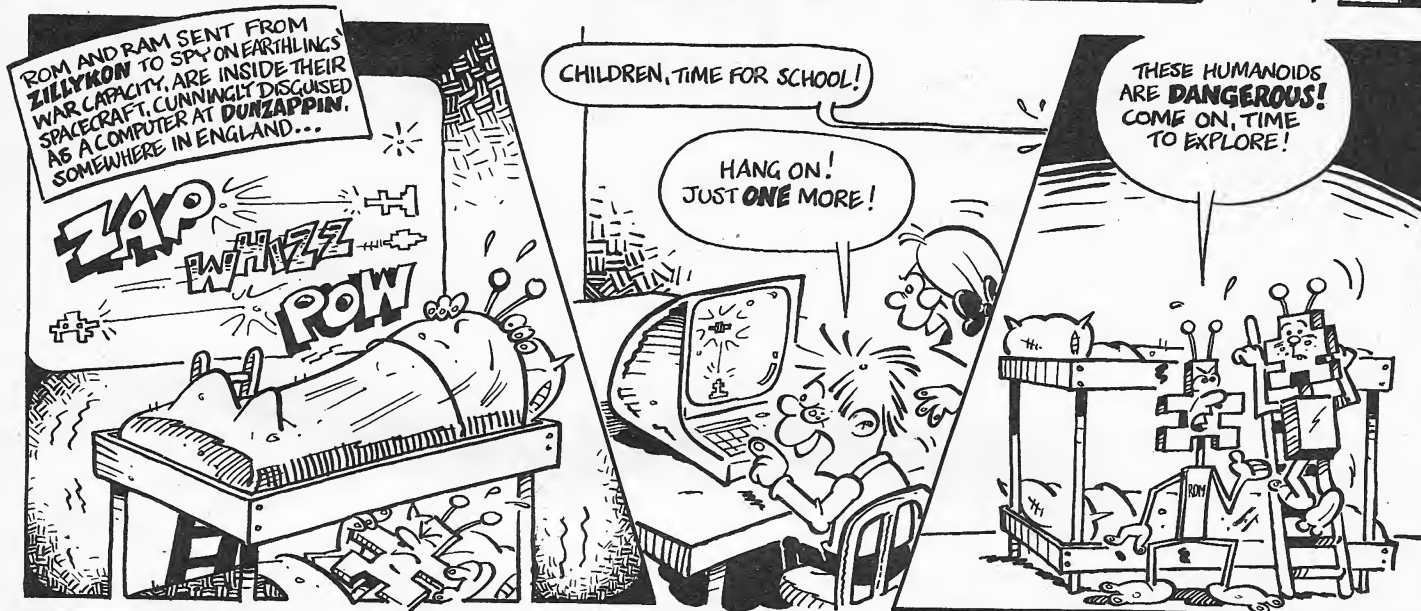
The author, Dennis Jarrett, is a successful journalist who was also founder editor of Which Computer? magazine — so his first edition quickly became a standard work. Now this new, substantially enlarged and revised edition covers the latest trends, terms and technology with the relevant facts — and **ONLY** the relevant facts — in **plain English**.

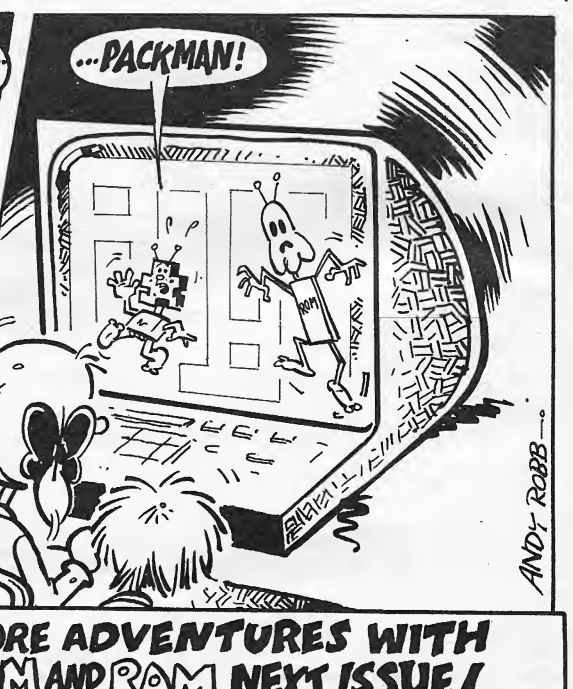
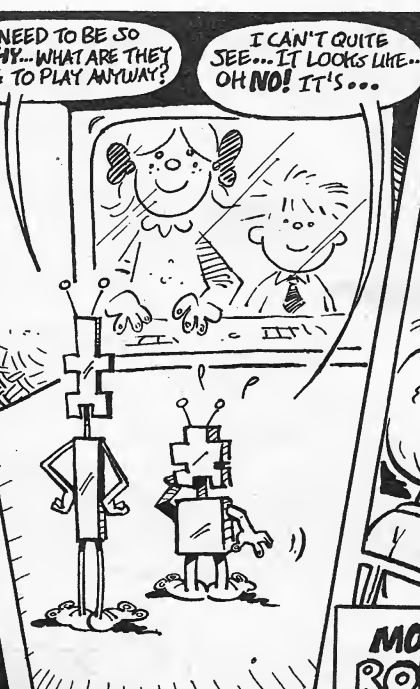
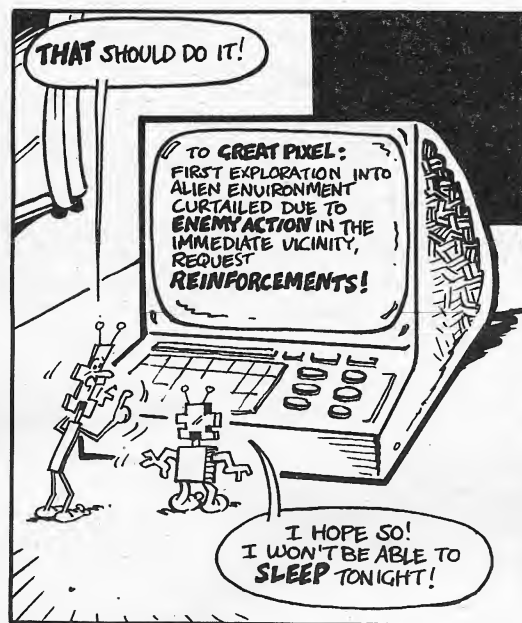
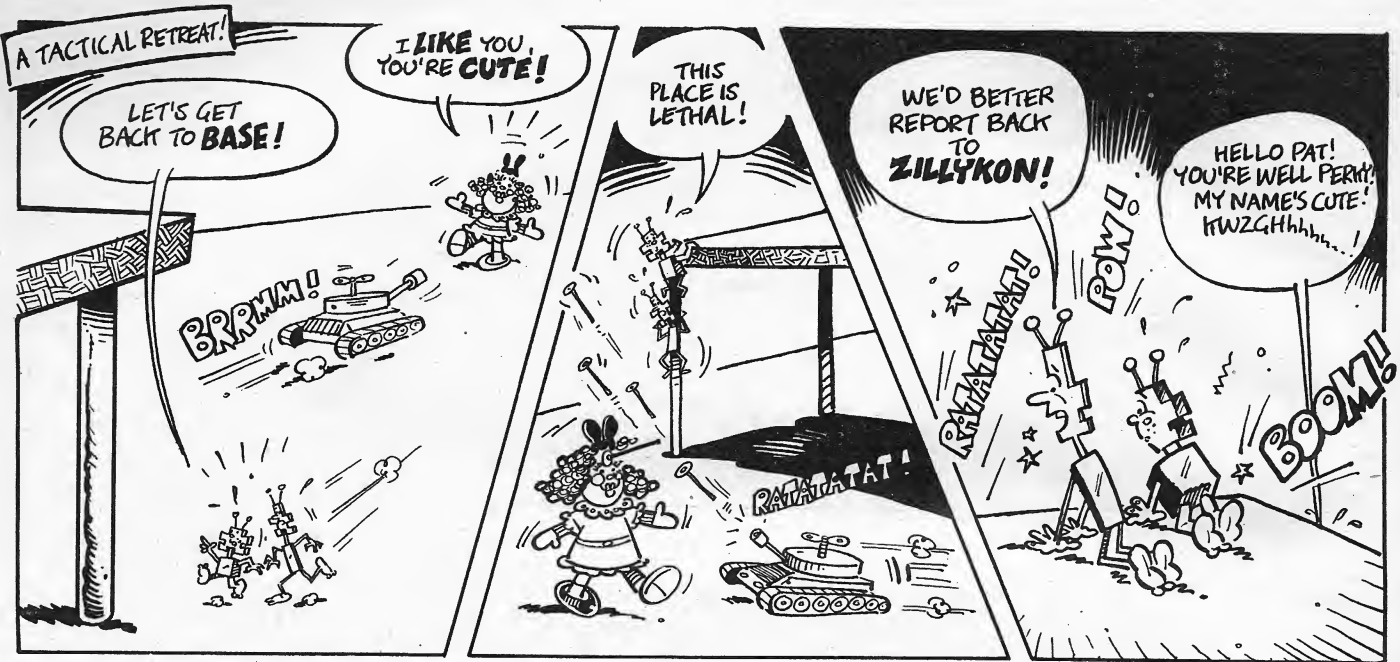
Here's another fact you'll find fascinating: it will only cost you £2.95!

Use the coupon below to get your copy right away — or buy it soon from your bookshop. It's the **one** book you'll turn to again and again.

Please send me _____ copy(ies) of The Good Computing Book for Beginners by Dennis Jarrett at £2.95 each plus 50p post and packing. I enclose a cheque for _____
account Visa/Access/Diners/Amex number _____
Signature _____ Name _____ Address _____
Send to: _____ (please print clearly)
ECC PUBLICATIONS LIMITED
30-31 Islington Green
London N1 8JH

THE ADVENTURES OF ROM AND RAM







BRAINY'S BRAINBOX

Which computer magazine?

CAN YOU SUGGEST a good home computer magazine for me? There seem to be so many and I can't understand most of them.

Beano-reader, Liverpool

FOR A START there's this one but you must know that if you're reading it. If it doesn't give you what you want, why not write and tell me? Describe for what you want a magazine, then look at ones which might do. Some are good for some machines; some are best for news and so on. *Sinclair User* is for Sinclair users and is good value. My father says that *Your Computer* is very good for cheap machines but my friends say that *Personal Computer News* is much better. Look in your bookshop but don't let them catch you reading all the magazines.

Starting out with Sinclair

I AM THINKING of getting a computer. Can you suggest a suitable one which is cheap for a beginner?

Helen Field, Birmingham

THE ZX-81 COMPUTER is probably the cheapest but the Sinclair Spectrum has colour, sound and hi-

res graphics. Both are easy to understand and there are many books and programs for them; the Spectrum 16K costs £99.95 and the ZX-81 only £39.95.

Making millions with your micro

I HAVE a computer and I read in the paper that computers can make you rich. How do I start?

Emily Cotsell, Sheffield

SELL YOUR computer for twice its price. One million people have computers but not many of them have become rich.

Examination revision tapes

I AM TAKING my O level examinations next year and was wondering if you could suggest any good revision tapes which I could buy to help my work. I need help with physics, chemistry and maths. Please give me some advice or I shall fail.

Sarah Browning, Manchester

THERE ARE many revision tapes on sale, most of them written by teachers who appreciate the learn-

HI! I'M BRAINY and I really rate computers. I'm in Load Runner every issue so write to me at 30-31 Islington Green, London N1 and I'll do my best to answer any questions you have. Believe me, no problem is too small... I can tell you why you should convince your parents to invest in a computer or I can end your Loading problems.

Remember, Brainy's the name and, by the way, I will pay £1 to anyone who's name is mentioned. Write away!

ers' problems and make revision an enjoyable pastime. All those I have tried I have found helpful, so I think the best thing would be to look round your nearest computer software shop. You could also write to MUSE, Westhill College, Birmingham 29. MUSE is an educational computing club with many programs for members. Your parents can join.

* * *

Used ZX-81 — cheap at the price?

SOMEONE at school wants to sell his ZX-81 for £50. Is that a bad price or a good one?

Mark Vaughan, King's Lynn

IT IS NOT a good price because you can now buy one new for £39.95 and I would recommend £20-£30, depending on the condition. I suppose £50 isn't bad if it has 16K memory. Also if he has any software it will encourage prospective buyers. Make sure it works properly.

* * *

Advice on how to ESCAPE

PLEASE could you tell me how to interrupt a program and change it?

Ruth Guest, King's Norton

PRESSING BREAK will usually solve the problem. While RUNning a program on the BBC and most other computers, you can interrupt it by pressing ESCAPE if you want. Then the computer will be easy to change its program. You could also pull out the plug; when you plug it back the computer will have lost its memory. My dog usually trips over the wires and pulls them out while we are writing a program, so keep PETs away—a computer joke.

Apple II



Apple Computer (U.K.) Ltd
 Finway Road,
 Hemel Hempstead,
 Herts,
 HP2 7PS

Specifications

Price	£812
Number sold	53,000 +
How sold	Assembled
Processor	6502
Standard RAM	48K
Expansion RAM	—
Basic + operating system	8K or 12K in ROM
Display	Colour 24 lines × 40 characters
Tape recorder	—
Backing storage	Disc drives

Software

Digital Research, Comshare Ltd, 32-34 Great Peter Street, London SW1P 2DB.

Books

The Personal Computer Guide, by Tim Hartnell — Virgin Books Ltd, 61-63 Portobello Road, London W11 3DD.

Comments

The Apple II was superseded by the Apple IIE. Both machines are well-regarded in the business market and a good deal of software, such as word processing packages and accounting programs, has been written to consolidate its lead in this market.

The computer is not only used by businesses. A wide variety of games programs are available on disc for the system. A useful, short, routine is printed below, courtesy of Hilderbay Ltd.

```

10 HOME : PRINT "A simple, but useful adding ma
   chine."
20 PRINT : PRINT "Illustrates the use of scroll
   ing screen 'windows'."
30 PRINT : PRINT "Enter numbers to add, each fo
   llowed by RETURN. Negative numbers are allo
   wed."
40 PRINT "Press / RETURN after entering the las
   t number.": PRINT : PRINT
50 SL = 0: REM 0: screen. 1: printer.
60 BL$ = "          ":SUM = 0: PRINT : PR# SL: PRINT
   "Addends    Sum    Details": PRINT : PR# 0

70 VP = PEEK (37): GOSUB 160: VTAB 23: CALL -
   958: INPUT "Next addend? (/ after last) ";Q$
   : REM PEEK (37) is cursor line. CALL -958 c
   learns to end of screen.
80 IF LEFT$ (Q$,1) = "/" THEN 130
90 VTAB 23: CALL - 958: INPUT "Details? ";X$
100 X = VAL (Q$):SUM = SUM + X
110 GOSUB 150: VTAB VP + 1: PR# SL: PRINT LEFT$
   ( STR$ (X) + BL$,10); LEFT$ ( STR$ (SUM) + B
   L$,10);X$: PR# 0
120 GOTO 70
130 VTAB VP + 1: PR# SL: PRINT "-----
   -----": GOSUB 170: CALL - 958: PR#
   0: CALL 1002: END
140 REM 150, 160, 170: top, bottom, normal scre
   en window.
150 POKE 34,0: POKE 35,21: RETURN
160 POKE 34,22: POKE 35,24: RETURN
170 POKE 34,0: POKE 35,24: RETURN
    
```

TRUMBULL'S WORLD

IN THE OVERCROWDED WORLD OF THE FUTURE, PROGRAMMER **TRUMBULL** DISCOVERS THE EQUATION THAT WOULD ENABLE MAN TO TRAVEL TO OTHER GALAXIES. FEARING THAT THE GOVERNMENT, LED BY THE SINISTER **SIMIAN** WILL MISUSE THE INFORMATION, HE HIDES IT INSIDE HIS COMPUTER-CREATED FANTASY WORLD...

SIMIAN SEARCHES FOR THE EQUATION THAT WILL ENABLE MAN TO TRAVEL TO ANOTHER GALAXY.

THE CHILDREN OF PROGRAMMER **TRUMBULL**, MARC AND JAN. THEY MUST KNOW HOW TO GET INTO THE ADVENTURE WORLD TO RETRIEVE THE EQUATION.

WE'VE INTERROGATED THEM GENTLY, BUT THEY TELL US NOTHING ABOUT THE LINK BETWEEN THE EQUATION AND THE CLASP.

I WILL TAKE THEM IN HAND. THEY WILL RESPOND TO ME.

AS YOU WISH.

SIMIAN STRUTS UP AND DOWN...

I **MUST** GET INTO THAT **GAME**! IF I CAN FIND THE EQUATION, I CAN CONTROL THEM ALL.

GUARD, TAKE ME TO THE CHILDREN!

YOUR FATHER **LOVED** YOU, **CONFIDED** IN YOU. HE TOLD YOU HOW TO GET INTO THE **GAME**, DIDN'T HE?

NO. WE DON'T KNOW ANYTHING.

TRUST ME. I MEAN YOU NO HARM.

LIAR! YOU'D KILL US IF YOU **DARED!**

AT ONCE **SIMIAN**.

SIMIAN DRAGS THE CHILDREN TO THEIR FEET...

THE MORE YOU RESIST, THE WORSE IT IS FOR HIM!

SCRIPT:
ROB BEATTIE

ARTWORK:
MALCOLM STOKES

LETTERS:
STEVE POTTER

LET ME GO!

... AND SHOVES THEM...

...OUT INTO A NIGHTMARE!

HAVE NO FEAR, WE SHALL FIND IT!

THE EQUATION'S SOMEWHERE INSIDE HIM.

IT'S ONLY A MATTER OF TIME.

FATHER!!

THE CHILDREN ARE TAKEN BACK TO THE CELLS... WHERE IT IS ALWAYS NIGHT.

MARK? WHAT'S WRONG?

I'M SORRY... I JUST COULDN'T SLEEP.

MARC AND JAN REMEMBER THEIR FATHER...

DID YOU SEE HIM? THE LOOK ON HIS FACE? IT WAS HORRIBLE.

THAT'S NOT FATHER. IT'S WHAT THEY'VE TURNED HIM INTO.

HOW HE USED TO BE...

REMEMBER HIS FUNNY WAYS. THAT SILLY ADVENTURE GAME HE WAS ALWAYS PLAYING.

YES. IT WAS ON THE SYSTEM WHEN THE GUARDS CAME FOR HIM...

...THE REALIZATION STRIKES!

WHAT IF HE HID THE EQUATION IN THE **ADVENTURE WORLD**... IT WOULD BE THE PERFECT PLACE!

AND NO-ONE CAN GET INTO THE GAME BUT US. WHICH IS WHY WE'RE SO IMPORTANT!

BETWEEN THEM, THEY UNRAVEL THE MYSTERY.

THAT'S WHAT THEY MEAN WHEN THEY GO ON ABOUT THE 'CLASP'.

FATHER DIGITISED THE JUMP CO-ORDINATES AND HID THEM IN HIS GAMES WORLD. IF WE COULD ONLY GET TO THE COMPUTER!

MARC STOPS AS...

THEY PLAN TO OVERPOWER THE GUARD...

HE'LL NEVER EXPECT IT.

IF WE ACT DOCILE, WE MIGHT GET AWAY WITH IT.

THE CHILDREN TENSE FOR THEIR ESCAPE...

COME ON YOU IN THERE!

WAKE UP IN THERE!

THAT'S FOR MY FATHER!

NOW!

THEN THEY MAKE THEIR ESCAPE...



TRUMBULL'S WORLD

THE CHILDREN SURVEY THE STRANGE LAND IN WONDER...

THERE'S SO MUCH SPACE.

THE SIZE OF THE TREES... WHAT'S THIS?

THAT'S A KNIFE... AND THIS IS SOME SORT OF CONTAINER.

D'YOU THINK THAT'S WHAT FATHER MEANT...

TRUMBULL'S FACE ON THE SCREEN...

THEY REMEMBER!

HE KNEW WE'D GET HERE SOMEHOW!

WATCH FOR SIGNS HE SAID. I WONDER WHAT HE MEANT?

JAN IS ENTRANCED BY THE BEAUTY AS MARC MAKES A DISCOVERY.

JAN! LOOK A NOTE!

WHAT'S IT SAY?

THE FIRST CLUE!!

WHAT DOES IT MEAN?

I CAN HEAR WATER... FROM THE WEST.

THE CHILDREN FOLLOW THEIR ONLY CLUE...

WHAT DOES IT MEAN... SOMETHING ROUND UNDER-GROUND?

AND WHY ALL THE STUFF ABOUT SONS AND DAUGHTERS? IS THAT US?

UNAWARE THAT THEY ARE BEING FOLLOWED!

THEY ARE HORRIFIED AS THE SHAPES EMERGE FROM THE WOODS...

WELL, WE CAN'T CROSS THAT ALONE! THE RIDDLE MUST HAVE THE ANSWER.

WE'VE GOT TO CROSS THAT RIVER BEFORE THOSE THINGS REACH US!

BUT WE CAN'T UNLESS WE SOLVE THE RIDDLE!

THEY REACH THE RIVER AS THE DARK SHAPES GATHER... SNIFFING.

YES, BUT I FEEL CREEPY, AS THOUGH WE'RE BEING WATCHED.

SNIFF! SNIFF!

THEY BEGIN TO TURN...

WHAT IS IN THE WOODS? WHAT IS THE MEANING OF THE RIDDLE? CAN MARC AND JAN SURVIVE? NEXT ISSUE: FRIENDS AND ENEMIES.

Airport '83

Air Traffic Control at Heathrow handles sixty aircraft an hour . . .



JUST IMAGINE you are sitting in the control tower at Heathrow Airport. It is 2am and the bright lights of the runways are shining at you. The computer map on the IBM 9020D in front of you tells you that in the next hour 30 aircraft are approaching for landing and 31 waiting for take-off.

Without a computer that would be a moment of panic. The IBM at Heathrow stores details of every departure flight, relaying the information at intervals to all air traffic controllers through whose airspace an aircraft will pass and, at various sites in the British Isles, radar stations identify and collect information of each incoming aircraft flight level, speed and the like—sending it automatically to the IBM at base, giving the precise time of arrival of each aircraft.

Between landings you have to organise the take-offs of scheduled departures, ensuring there is always sufficient airspace and landing room, and that aircraft pass each other at a safe distance. If there is no free runway, you ask incoming aircraft to wait, sometimes forming a queue, known as "stacking", at varying heights.

Because of modern technology, flying is now safer than driving a car. If you think you could handle such a responsible and exciting job, why not contact the Civil Aviation Authority at CAA House, 45-59 Kingsway, London, WC2B 6TE. Tel: 01-379 7311.

Top left: the IBM 9020D in the London Air Traffic Control Centre at West Drayton. © CAA.

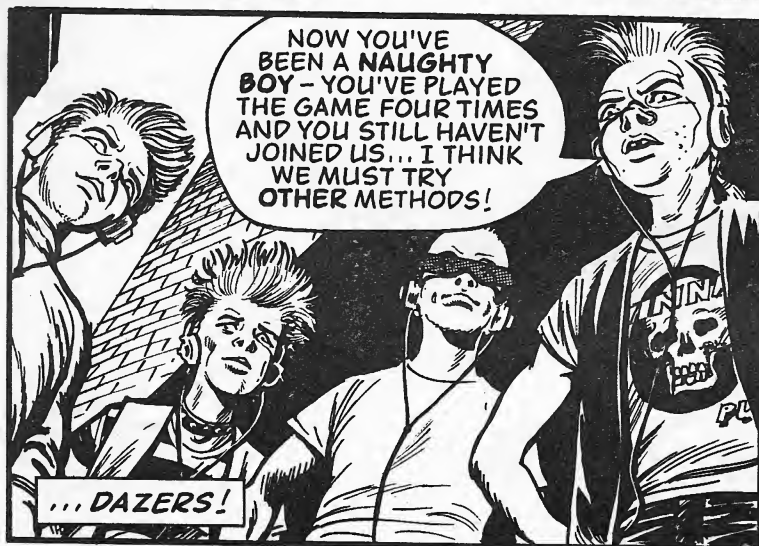


THE INVASION OF THE ARCADIANs

THE CITY SEEMS PLAGUED BY GANGS OF ROVING 'DAZERS' - KIDS WHO HAVE BEEN CHANGED INTO ZOMBIE-LIKE AUTOMATONS AFTER PLAYING AN ARCADE GAME CALLED *mind warp*. NO-ONE KNOWS WHERE THE GAME COMES FROM, BUT THE RESULTS ARE STARTLING!

THEN ONE DAY, A STRANGE FIGURE MATERIALISES IN AN ALLEY IN THE CITY...

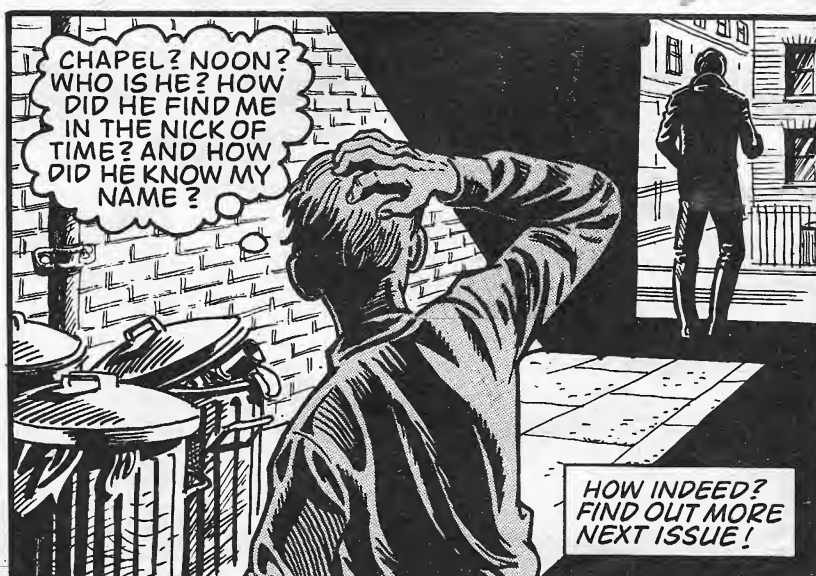
...AT THE OTHER END OF THE ALLEY, A SMALL FIGURE LIES COWERING IN TERROR FROM...







THE BLACK STRANGER REMOVES THE DAZERS' HEADPHONES...



Meanwhile back at the ranch...

Even the cows are computerised at Bridget's Experimental Farm

THE DAYS OF Daisy the cow are numbered. Soon she'll be just another set of figures in a computer memory. Down on Bridget's farm, just outside Winchester, the Ministry of Agriculture, Fisheries and Food is running the country's first fully-automated dairy parlour. The feeding, milking and record-keeping are controlled almost completely by microcomputer and Chris Laycock, the chief dairyman, says that his job has been made considerably easier as a result.

Each of more than 400 cows on the farm wears a yellow plastic collar, to which is attached a blue locket containing a microprocessor which is programmed with the cow's individual number. When a cow enters the milking parlour the computer identifies her by recording that number and then measures her milk yield, notes her weight, and records that information.

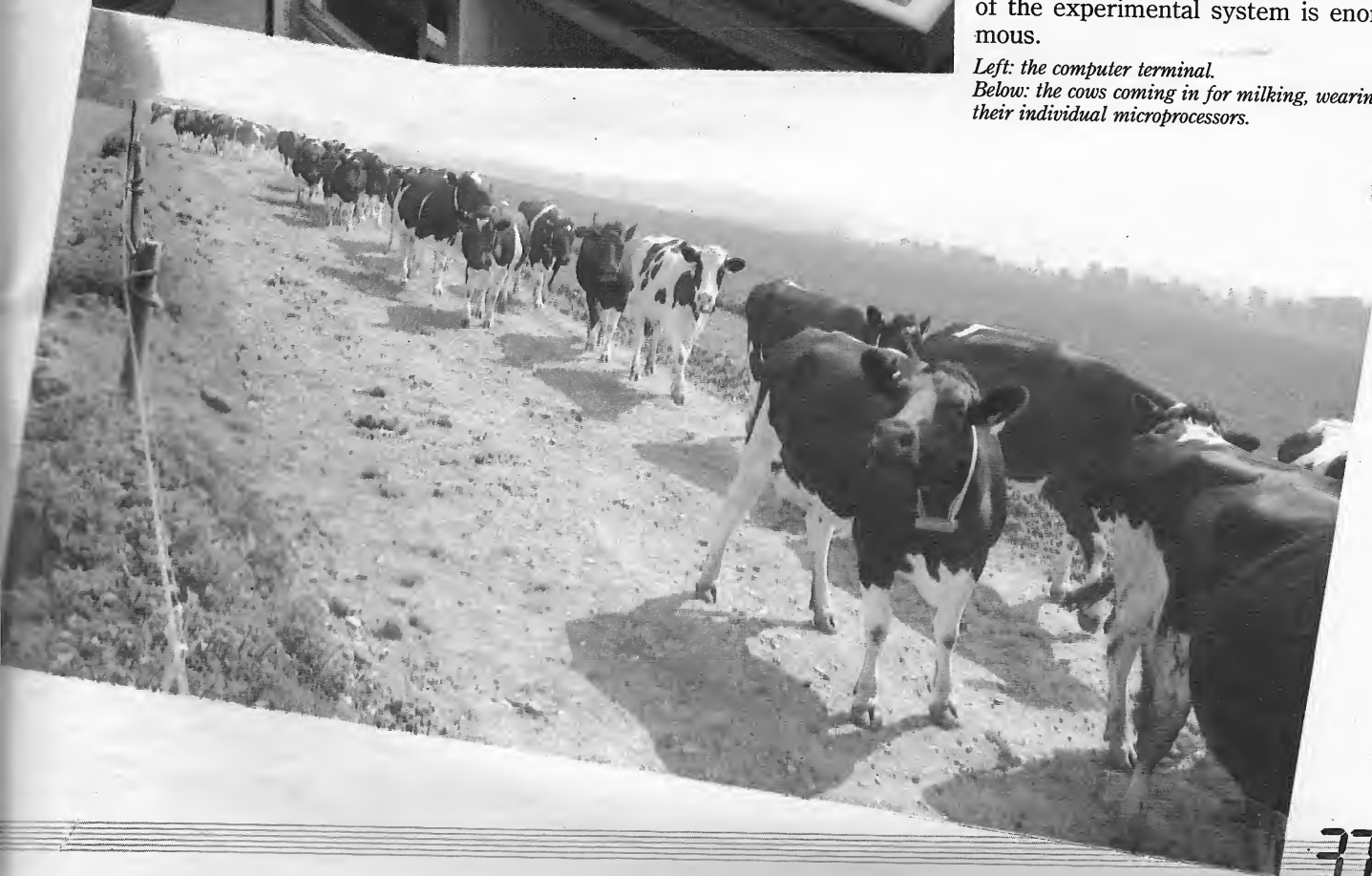
In that way the computer can regulate the amount of food required by each animal and can monitor abnormal weight loss caused by calving or illness.

On Sundays, the computer prints out a weekly report detailing all that information, providing Chris with an up-to-date report on every cow in his herd.

He is possibly the first dairyman to have such a complete and accurate assessment of herd performance. The labour-saving, and consequent money-saving, potential of the experimental system is enormous.

Left: the computer terminal.

Below: the cows coming in for milking, wearing their individual microprocessors.



The latest for Sinclair, Vic-20 and TI99/4a owners – at unbeatable prices!

The newest games like Carwars . . . Blasto . . . Pitman 7 and many more take their place this month in our lists! Remember we search for brilliant new program sources throughout the U.K. and North America to find an exciting collection of new games — and business programs — many of which cannot be bought by mail order from any other source!

Every month, we'll be adding to our catalogue to bring you the best of new games, new business, educational and household software.

With our special new deal — you just CAN'T GO WRONG.

- * A free offer every month (this time it's a free blank C20 cassette with every two games ordered)
- * A replacement guarantee if you're not entirely satisfied with your purchase — that's how confident we are about the quality and value!

All you have to do is look at our new HOT selection, then order quickly to be among the first to own these games of skill, intelligence and excitement (fast delivery is another of our specialities).

FREE BLANK C20 COMPUTER CASSETTE WITH EVERY TWO CASSETTES YOU ORDER!

Remember there's no limit to the number of free cassettes you receive if your order justifies them — so why not get together with friends or user group members and share the freebies?

GUARANTEE

Order with complete confidence. If you are not entirely satisfied with the quality of your purchase return it to us within 7 days and we will provide a replacement.

GREAT VALUE! TREMENDOUS SELECTION! PLUS A FREE OFFER EVERY TIME!

Fill in the order form right away — we're guaranteeing fast delivery, quality and satisfaction (after all, we want you to come back for more!)

The Software Workshop, Yew Tree, Selborne, Hants GU34 3JP



Now we've got a NEW selection for VIC 20 and Texas Instruments computers – as well as Sinclair!

TI (99/4a) Software

- TI-01 **Number Magic** £15.95
For the mathematically talented
- TI-02 **Carwars** £21.95
Fasten your seatbelt — it's a rough ride!
- TI-03 **Alligator Mix** £27.95
Watch those teeth . . .
- TI-04 **Blasto** £21.95
Explosive fun!

Vic 20 Software

- CV-01 **Paratroopers** £5.95
Your chance to be a hero
- CV-02 **Cyclons** £5.95
Just you and your skill against mighty forces
- CV-11 **Sheer panic** £6.95
But you keep your cool while others run for cover
- CV-12 **Pitman 7** £6.95
Pit your experience against this challenge!

ZX81 Software

- 1-01 **Stock Market** £3.95
Buy and sell your way to millions! 16K RAM
- 1-02 **Football League** £3.95
First division fun for the soccer enthusiast. 16K RAM
- 1-03 **Test Match** £3.95
Match your wits alongside the superstars. 16K RAM
- 1-11 **Arcade Action** £4.95
Overtaker/Missile Man/Space Fighter/Pilot/Greedy Gobbler/Extra Terrestrial. 1K
- 1-12 **Avenger** £4.95
Avoid missiles and bombs to become the ruler. 16K RAM
- 1-13 **Protector**

Defend your own ship from oncoming attackers. 16K RAM **£4.95**

Spectrum Software

- 2-12 **Avenger** £4.95
[See 1-12 under ZX81]. 48K RAM
- 2-13 **Sentinel** £4.95
Guard your mother ship against alien attacks. 48K RAM
- 2-14 **Meteor Storm** £4.95
Spectrum version of the ever-popular arcade game. 16K or 48K RAM
- 2-15 **Star Trek** £4.95
Popular space program brought to life by excellent graphics. 48K RAM
- 2-21 **Frogger** £5.95
Manoeuvre the frog across the road avoiding heavy traffic. 48K RAM
- 2-22 **Crazy Balloons** £5.95
Guide the balloons round the maze without bursting. 48K RAM
- 2-23 **Arcadia** £5.95
The expert's version of the popular 'Invaders' game. 16K or 48K RAM
- 2-24 **Golf** £5.95
The finest of golf handicap games. 48K RAM
- 2-25 **Test Match** £5.95
More exciting than the real thing! 48K RAM
- 2-26 **Derby Day** £5.95
This favourite has to be a winner. 48K RAM
- 2-27 **Rescue** £5.95
Rescue the Princess from marauding patrols. 48K RAM
- 2-28 **The Orb** £5.95
Discover the Orb in the depths of the temple but watch the monsters. 48K RAM
- 2-29 **Jackpot** £5.95
The harmless way to take on the one-armed bandit. 48K RAM

To: The Software Workshop, Yew Tree, Selborne, Hants GU34 3JP

I wish to order the following programs. I understand that:

- * I will receive a FREE blank cassette with every 2 programs ordered
- * I can return products within seven days if not entirely satisfied and receive a replacement to the same value.

Ref No	Qty	Title	Price

Postage, packing and handling: add 45p for the first cassette, and 25p for each additional cassette. Non-UK orders add extra 50%

Total

I enclose a cheque/postal order for _____

Name _____

Address _____

(Allow 28 days MAXIMUM FOR DELIVERY)



